Perceptions of cognitive health:

An ethnographic inquiry of rural older adults

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ABSTRACT

Approximately 500,000 Canadian seniors suffer from dementia and this number is projected to increase significantly. The prevalence of dementia rises substantially with age. Existing literature focuses predominantly on the perspectives of older adults who have been diagnosed with dementia, but little is known about the ways that healthy older adults without dementia support their cognitive health, especially within rural communities. It is important to study the perceptions of rural seniors as they often face important barriers to cognitive health service utilization which is compounded by geographic distance, insufficient public transportation, limited seniors' housing, and inadequate access to health and support services. Given the aging demographic in many rural communities across Canada, dementia has significant implications not only for individuals and their families but also for healthcare, community organizations, and government. The purpose of this study was two-fold: 1) to examine rural older adults' perceptions and meanings of cognitive health; and 2) to identify how healthy rural seniors maintain and support their cognitive health. Exploring the perceptions of cognitive health among specific groups such as rural older adults facilitates the development of appropriate programs and strategies to support dementia education and awareness.

Guided by ethnography and working in collaboration with local community partners, data was collected through participant observation and two waves of semi-structured interviews. Participants included 42 healthy older adults without dementia aged 60 and older in the rural communities of Watrous and Young, Saskatchewan, Canada. Drawing on the World Health Organization's Active Aging Framework and a combination of lay theory and cultural schema theory, thematic analysis was conducted to identify key themes, patterns, and relationships within the data. Findings revealed a more complex and multidimensional view of cognitive

health than previously cited in the literature. Based on the findings of this research, a Rural Cognitive Health Framework consisting of four key domains including intellectual health, social health, emotional health, and functional health was produced. Rural seniors identified a variety of supports and challenges to maintaining their cognitive health in each of these domains within a rural context, such as using technology to augment their social support and communication with family and friends.

There is an increasing need for knowledge on preventative interventions to support and sustain cognitive health among older adults without dementia. The findings of this study suggest it is important to move beyond biomedical interventions to interventions informed by lived experience and a social determinants approach. Lay perspectives and contextual sensitivity are essential to understanding rural older adults' perceptions of cognitive health. For example, rural older adults may have local insight or experiential knowledge in relation to identifying key supports and challenges affecting their cognitive health. A key implication of this study is that it is pertinent for decision makers to engage in local partnerships and recognize the importance of rural older adults' perceptions, knowledge, and experiences. As policy makers, community leaders, and researchers work to address the cognitive health needs of the rural aging demographic, it is essential to listen to the perspectives of rural older adults.

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This thesis is dedicated in memory of my good friend Mike Morrissey.

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Chapter 3

Bacsu, J. Conducting engaged scholarship in cognitive health research: Methodological lessons from rural seniors (unpublished).

Chapter 4

Bacsu, J, Abonyi, S., Viger, M., Morgan, D., Jeffery, B., & Johnson, S. (Submitted for review). Rural older adults' perceptions of cognitive health: Toward a conceptual framework. *Canadian Journal on Aging.*

Co-authorship: This manuscript was developed in collaboration with the committee members, Dr. Sylvia Abonyi, Debra Morgan, Bonnie Jeffery, Shanthi Johnson, and the organizational partner, Dr. Marc Viger. Juanita Bacsu had the primary role in the data collection, analysis, and writing of this manuscript. Drs. Abonyi, Viger, Morgan, Jeffery, and Johnson provided guidance, suggestions, and editorial input into the creation of this manuscript.

Chapter 5

Bacsu, J. Rural older adults' perspectives: Interventions to support cognitive health (unpublished)

CHAPTER 1

INTRODUCTION

1.1) Introduction

"Edna" is a 75 year-old woman who lives alone with her husband on a farm. Over the last year, she has noticed that her husband has become increasingly distant and confused. Edna is frightened and feels alone in dealing with her husband's changes, she does not know who to talk to. Last fall, Edna received a call from the bank informing her that there was no money in their bank account. Her husband told her that the government had quit sending pension cheques. Three months later and barely surviving financially, she discovers the cheques in a bathroom drawer. She is hesitant to discuss her husband's health and when asked, she quietly whispers, "I think he has the Alzheimer's." Despite her reluctance, the news has slowly spread across town, and Edna now finds herself as the local town expert with others coming to her for advice.

Edna shared her story with the author in a previous study on rural aging (Bacsu, et al., 2014). Although cognitive health was not the study's focus, it emerged as a critical area of concern for rural older adults, which led to this current research. Edna is one of many rural seniors facing the challenges of dementia with limited public transportation, geographic barriers, inadequate seniors' housing, and poor access to health and support services (Elnitsky & Alexy, 1998). Seniors' cognitive health is an important issue, but there is a lack of research focusing on experiences in rural communities. This limited knowledge on rural seniors' cognitive health has an important influence on the interventions designed to support rural aging.

Exploring the perceptions of cognitive health among specific groups such as rural older adults is important to facilitate the development of appropriate programs and strategies aimed at dementia awareness, education, and prevention. A group's cultural characteristics often influence

health-related priorities, views on the causes of illness, health-information seeking behavior (Kreuteri & McClure, 2004), and health promotion and prevention activities (Pasick, D'Onofrio, & Otero-Sabogal, 1996). For example, a cultural group's perceptions of health may influence the context for utilization or non-utilization of health services among different groups (World Health Organization, 2002). Medical anthropology literature emphasizes the importance of understanding a cultural group's perceptions and meanings toward health and illness (Kleinman, 1986; 1977). For example, research on mental health and schizophrenia has found cultural differences where hallucinatory and suspicious behaviour is not necessarily viewed as being indicative of mental illness (Pote & Orrell, 2002). Forbes and Hawranik (2012) assert that in Canada rural stoicism, independence, self-reliance, and feelings of obligation may contribute to health care underutilization among rural caregivers of older adults with dementia. In addition, a cultural group's foods, nutritional intake, and lifestyle practices may vary by geography and seasonality influencing certain diseases (Johnson, Nobman, Asay, & Lanier, 2009), such as dementia. For example, current research indicates that there is a reduced risk of dementia among seniors who consume green leafy vegetables (Bennett, Schneider, Buchman, Barnes, Boyle, & Wilson, 2012). Chin, Negash, and Hamilton (2011) suggest that cultural factors can influence delayed diagnosis and treatment of dementia, as there are differences in perceptions of what is normal aging in relation to memory loss. Understanding the impact of cultural factors on cognitive health and being aware of these factors are useful for supporting early dementia diagnosis and treatment.

1.2) Rationale

Globally, an estimated 46 million people have dementia and this number is projected to increase to 131.5 million by 2050 (Alzheimer's Disease International, 2015). It is well

documented that the prevalence of dementia rises substantially with age (van der Flier & Scheltens, 2005) and it is anticipated that dementia will increase significantly with the aging demographic in rural communities. This rural aging phenomenon is occurring worldwide (Morgan et al., 2009) which has pertinent implications for health professionals and policy makers. In 2012, the global cost of dementia was estimated at US$ 604 billion per year (World Health Organization, 2012). Currently, dementia has no known cure and it is the primary cause of disability among older adults (Alzheimer's Disease International, 2014).

Existing rural cognitive health literature focuses primarily on three groups of people including: (1) older adults diagnosed with dementia (Beard, Fetterman, Wu, & Bryant, 2009; Blackstock, Innes, Cox, Smith, & Mason, 2006; Forbes, Morgan, & Janzen, 2006), (2) family caregivers (Morgan, Semchuk, Stewart, & D'Arcy, 2002; Smale & Dupuis, 2004), and (3) healthcare providers (Connell, Kole, Avey, Benedict, & Gilman,1996; Hanson, Hughes, Routley, & Robinson, 2008; Meuser, Boise, & Morris, 2004). For example, multiple studies examine rural primary care providers' perceptions toward dementia diagnosis and treatment (Hansen, Hughes, Routley, & Robinson, 2008; Teel, 2004). However, there is a paucity of research on perceptions of cognitive health among healthy older adults without dementia, especially within rural communities. Given the aging demographic in many rural communities across Canada, dementia presents significant issues for various stakeholders including community leaders, healthcare professionals, and policy makers (Forbes & Hawranik, 2012). Rural older adults experience unique challenges in accessing cognitive health services and early dementia diagnosis as a result of geographic distance, insufficient public transportation, isolation, shortage of skilled health professionals, and inadequate access to health and social services (Hansen, Robinson, Mudge, & Crack, 2005; Innes et al., 2006). Moreover, the sparse population of rural areas pose challenges

in providing the necessary economies of scale to support cognitive health service delivery (Hansen, Hughes, Routley, & Robinson, 2008; Heath, 2005).

In addition, there is a lack of information-related to the cognitive health perceptions among older adults in rural communities. The Australian Government (2009) asserts that how cultural groups perceive cognitive health may affect whether dementia is identified, whether there is early diagnosis, and whether dementia is openly addressed within the community. Accordingly, examining the influence of culture on cognitive health perceptions is useful to informing the provision of effective interventions to support dementia care services among rural older adults.

In order to address the growing issue of dementia in rural communities (Statistics Canada, 2011), it is essential to understand how cognitive health and preventative interventions are conceptualized among rural older adults. Examining healthy rural seniors' perceptions of cognitive health supports the development of targeted interventions aimed at dementia awareness, education, and prevention in rural communities.

1.3) Research objective and questions

The objective of this study was to examine rural seniors' perceptions of cognitive health to inform the development of programs and interventions aimed at awareness, education, and prevention in rural areas. Guided by an ethnographic methodology and a community based participatory research approach, the primary data gathering methods included participant observation and interviews. Following ethical approval from the University of Saskatchewan (Appendix A), semi-structured interviews and participant observation were conducted with older adults living in the rural communities of Watrous and Young, Saskatchewan, Canada.

This research was guided by the following research questions:

1) How do healthy older adults without dementia perceive cognitive health within the context of rural Saskatchewan?
2) How do rural older adults maintain and support their cognitive health?

1.4) Literature review: Cognitive health

Cognitive health refers to one's ability to think, communicate, learn, and remember. It is the basis for how we reason, judge, concentrate, plan, and organize (National Institute on Aging, 2013). Cognitive impairment refers to problems with memory, communication, thinking, and processing information (Moyer, 2014). Cognitive impairment can signal issues related to different types of dementia. Dementia is the term used to describe a constellation of conditions characterized by cognitive decline resulting from brain cell death. Symptoms of dementia include a decline in a broad range of cognitive abilities such as memory, communication, intellect, social skills, emotional reactions, mood changes, functional ability, and problems with reasoning (Tampi et al., 2011). Different types of dementia include Alzheimer's disease, vascular dementia, Lewy body dementia, Parkinson's disease dementia, frontotemporal dementia (including Pick's disease), and Creutzfeldt-Jakob disease (Grand, Caspar, & MacDonald, 2011). Alzheimer disease is the most common type of dementia (van der Flier & Scheltens, 2005), accounting for 64% of all dementias in Canada (Alzheimer Society Canada, 2012b).

Age is the most important risk factor for developing dementia (Alzheimer Society Canada, 2014; van der Flier & Scheltens, 2005). Dementia affects less than 1% of people under age 65, 2.5% of people between the ages of 65 and 74, and 35% of people over age 85 (Dalziel, 2009). Dementia is progressive and the symptoms gradually increase as brain cells become impaired and die (Grand, Caspar, & MacDonald, 2011). In Canada, approximately 500,000 older

adults (65 years and older) have been diagnosed with dementia (Herrmann, Lanctôt, & Hogan, 2013), and this number is projected to increase to 1,125,200 by 2038 (Alzheimer Society of Canada, 2010).

Seniors are the fastest growing age group in Canada. In 2011, there were approximately 5 million Canadian seniors aged 65 years and older, and this number is anticipated to double by the year 2036 to 10.4 million older adults, making seniors approximately one quarter of the population (Human Resources and Social Development, 2013). By 2051, it is estimated that one in four Canadians will be 65 years of age or older (HRSD, 2013). Consequently as the Canadian population ages, there is an increasing need for the development of appropriate programs and interventions aimed at early dementia diagnosis, awareness, and prevention.

Families and friends who provide care to people with dementia face substantial economic burden from expenses incurred by healthcare costs, care giving, and the reduction of time for employment. In 2011, family caregivers in Canada spent over 444 million unpaid hours in caring for someone with dementia (Alzheimer Society of Canada, 2012a). Care giving is often provided by women, family members, and informal networks within the community (World Health Organization, 2012). However, in Canada the outward migration of rural youth to urban centres, and more women employed in the formal sector has decreased the availability of informal support in rural areas (Thorpe, Houteven, Sleath, & Thorpe, 2010).

Canada's aging demographic with dementia places an increased demand on health services, which creates economic challenges. In Canada from 2009 to 2010, approximately 23% of all seniors designated as Alternate Level of Care (ALC) had a diagnosis of dementia, and their median length of hospital stay was more than double that of seniors without dementia at 20 versus 9 days (Canadian Institute for Health Information, 2011). Alternate Level of Care refers

to people in acute care beds who no longer require acute care and are waiting to be transferred to a different care setting, such as rehabilitation or long-term care. Dementia patients are often designated as ALC because of inadequate capacity to address their post-acute medical, social, and residential care requirements. In Canada, the estimated formal and informal care costs of dementia which includes dollars in direct health costs, unpaid caregiver opportunity costs, and indirect costs associated with the provision of unpaid care total approximately $33 billion per year and it is estimated that by year 2040, dementia will cost Canada $293 billion dollars (Alzheimer Society of Canada, 2012a). Given the absence of a cure, dementia will continue to present growing financial challenges to families, communities, and governments (Hurd, Martorell, Mullen, Delavande, & Langa, 2013).

In 2014, the Government of Canada recognized the growing impact of dementia and launched a national initiative aimed at addressing dementia through the Canadian Consortium on Neurodegeneration in Aging (Public Health Agency of Canada, 2014). This initiative included plans for the development of a national dementia research and prevention plan. To date, there are only eight countries that have developed national dementia plans including: Australia, Denmark, France, Korea, the Netherlands, Norway, the United Kingdom, and the United States (WHO, 2012). As Canada's population ages, it is pertinent to have dementia prevention and awareness strategies in place to ensure early detection and cost-effective management.

Although there is no cure for dementia, there are modifiable risk factors related to lifestyle and environment (Alzheimer's Australia, 2014; Srisuwan, 2013). For example, existing studies suggest that dementia risk may be influenced by diet (Bowman et al., 2012), physical activity (Lautenschlager et al., 2008), social engagement (Hendrie et al., 2006), keeping mentally active, alcohol consumption, and smoking (Alzheimer's Disease International, 2014; Alzheimer's

Scotland, 2011). Many risk factors for dementia overlap with risk factors for cardiovascular disease, and include hypertension, high cholesterol, obesity, lack of exercise, and smoking (Alzheimer's Australia, 2012).

Several medical conditions can have similar symptoms to dementia such as thyroid disease, vitamin B12 deficiency, and depression (Alzheimer Society of Canada, 2012b). As a result, it is imperative for older adults to have a geriatric assessment to rule out any confounding medical conditions. Diagnosing dementia at an early stage can have a significant impact on health outcomes such as disease stabilization and delayed progression of cognitive and behavioral outcomes that may help to support the older adult's quality of life over time (Galvin & Sadowsky, 2012).

To date, research has focused primarily on pharmaceutical and biomedical treatments for dementia, with little emphasis on preventative interventions to support cognitive health (Kumar & Ekavali, 2015). Moreover, there is a widely held assumption that dementia is a normal part of the aging process and that little can be done to maintain and improve cognitive health (World Health Organization, 2012). For example, Clark and colleagues (2005) found that older adults delay medical consultation by as much as seven years due to the false normalization of the notion that aging is equivalent to dementia. Despite advancing age, recent studies indicate that the brain can repair itself, adapt, and be enhanced through neurogenesis and neuroplasticity (McDougall, 2009; Williams & Kemper, 2010). Research on neurogenesis and neuroplasticity highlight the need for innovative population health intervention research to develop programs and interventions that support older adults' cognitive health (Reichman, Fiocco, & Rose, 2010). Population health intervention research refers to research that produces knowledge on interventions that address underlying issues of health, social, economic, and environmental

factors to improve health outcomes at the population level (Frank, 2012; Frankish, 2012; Hawe & Potvin, 2009). In this study, the term 'intervention' refers to the development of, or any changes to, practices, policies, programs, research, funding, actions, or activities (e.g., formal or informal) on the determinants of health to affect the health outcomes of populations (Bacsu, et al., 2014).

1.5) Organizational structure

This dissertation uses a manuscript-style format and consists of six chapters. Three of the chapters are written as separate, but interrelated manuscripts (Chapters 3-5). All of the manuscripts have been formatted for coherence in style and consistency across the dissertation. This section provides an overview of the dissertation's organizational structure and describes each chapter in relation to the broader context of the dissertation. At the beginning of each manuscript, a brief introduction is included to provide the connection to the dissertation. Each manuscript's contribution to the overall objectives of the dissertation is revisited in the concluding chapter.

Chapter 1, this present chapter provides a general introduction and overview of the study on rural older adults' cognitive health. This chapter identifies the study's rational, objectives, and research questions. Additionally, this chapter provides a review of the existing literature on cognitive health.

Chapter 2 entitled, *Context of the study*, provides an overview of the study's community partnerships, methods, and data collection strategies used to examine rural seniors' perceptions of cognitive health. More specifically, this chapter provides information on the development of the community partnerships, and the context of the research setting in relation to the province, the communities, the people, and the local culture. A discussion is provided on the conceptual

framework and theoretical foundation of the study. Guided by ethnography and community based participatory research, this chapter also discusses the study's data collection and analysis. Lastly, key terms and their definitions are integrated into the text to provide clarity throughout the dissertation.

Chapter 3, *Conducting engaged scholarship in cognitive health research: Methodological lessons from rural seniors,* discusses important lessons learned in the study from using engaged scholarship with rural older adults. Five key areas are discussed including the importance of establishing local connections and initial partnership building, conducting locally relevant research, engaging in community outreach, using meaningful data collection methods, and developing community informed strategies for knowledge translation. By focusing on rural older adults' perspectives, this paper enhances current methodological knowledge and offers a unique contribution to existing geriatric health literature.

Chapter 4, *Rural older adults' perceptions of cognitive health: Toward a conceptual framework,* addresses the dissertation's first research objective by examining the perceptions of cognitive health among healthy rural older adults without dementia within the context of rural Saskatchewan. Through the study's findings, a Rural Cognitive Health Framework was developed consisting of four key domains ranging from social health to emotional health.

Chapter 5, *Rural older adults' perspectives: Interventions to support cognitive health,* examines key interventions that rural older adults highlighted as important to facilitating their cognitive health. This chapter focuses on the dissertation's second research objective by exploring how healthy seniors' maintain and support their cognitive health within rural communities. Building on the Rural Cognitive Health Framework discussed in the previous

chapter, this paper addresses interventions in relation to the framework's four domains of social, emotional, functional, and intellectual health.

Chapter 6, *Conclusion*, reflects on the study's overall findings and main contributions by proposing four interdependent themes to support rural older adults' cognitive health. First, there is a need to move beyond biomedical interventions to interventions informed by lived experience and a social determinants approach. Second, lay perspectives and contextual sensitivity are essential to understanding rural older adults' cognitive health. Third, collaboration with rural older adults is vital to supporting rural seniors' cognitive health. Fourth, ethnographic research is a useful means to elicit in-depth understandings of cognitive health. Throughout each of the themes, strengths, limitations, and further research areas are discussed.

1.6) Contributions of the primary investigator

Chapter 4 is a manuscript in this dissertation that is co-authored. However, it is the mutual understanding of all authors that Juanita Bacsu, as the first author, is the primary investigator (refer to Appendix I).

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CHAPTER 2

CONTEXT OF THE STUDY

2.1) Introduction

This chapter provides an overview of the study's community context, partnerships, methods, and data collection used to examine rural seniors' perceptions of cognitive health. This chapter includes detail on the study's research design and processes not described within the journal manuscripts that follow. First, this chapter begins with the community context to give the reader information on the province, research communities, and local culture. Second, this chapter provides background information and outlines the development of the study and community partnerships over time, particularly highlighting the impact of the researcher's involvement in past studies with older adults in the rural communities of Watrous and Young, Saskatchewan. Third, a discussion is provided on the conceptual framework and theoretical basis of the study, particularly highlighting the importance of local culture and community-level perspectives. Fourth, guided by ethnographic methodology and a community based participatory research approach an overview of the methods are provided, followed by a discussion of the data collection and analysis. Fifth, the chapter concludes with an overview of the integrated knowledge translation strategy (Canadian Institutes of Health Research, 2012) used to share study findings throughout the research.

2.2) Community context

I first traveled to the village of Young and the town of Watrous in the summer of 2009. However, one of my most memorable trips during this PhD study was in the winter of 2014. I distinctly remember the day, the weather was bitterly cold and looking back, it was through these

experiences and time spent within the rural communities, that I gained deeper insight into the local culture and values.

Today is February 24, 2014. It is minus 46 Degrees Celsius with the wind-chill, extremely cold and blowing snow. The sun shines bright and reflects across the windswept ice on the pavement. It is 8:45 a.m. and I am heading out to meet a group of seniors for coffee at a hall near the community of Watrous. My car didn't want to start this morning and I'm a bit concerned that no one will turn out for coffee given the cold weather. As I drive, the wind pounds against my car, thank goodness for winter tires…

Figure 1: Grain Elevator in Young

There is not a cloud in the frozen, blue sky. The gently rolling hills are dotted with the odd pine and some poplar trees, followed by an interlude with flat prairies where the views are unhindered for miles. The communities of Young and Watrous are located in north-central Saskatchewan, which are in the heart of Canada's grain belt. Along the way, I pass the large potash mine and a train racing along the side of the road, with its horn loudly announcing its arrival... As I near the village of Young, the silhouette of a large, wooden grain elevator beckons you into the community.

For many older adults in these communities, farming is a way of life. Farming not only provided an occupation but also food, transportation and overall subsistence. Growing up with limited services, many seniors emphasize the importance of being independent and self-reliant. As I drive along the highway I notice the lack of inhabited farm yards.

Large bold letters are painted on both sides of the grain elevator with the name of YOUNG. Through my time in the community, I learned that grain elevators in Saskatchewan

had the community's name painted on the two sides to make it easier for train operators to identify the community. The grain elevator used to be owned by the Saskatchewan Wheat Pool, but has since been sold and now sits in silence.

The closure of the community grain elevator in the 1990's foreshadowed the decline of the small family farms. The small farm lifestyle has been replaced by corporate farms and agribusiness. The community grain elevator that once served local farmers in Young has now been replaced by more centralized, consolidated, and much larger grain terminals away from the community. I think about how this theme of consolidation and amalgamation repeats itself throughout my research in terms of rural hospital closures, health regions, and rural municipalities. I can't help but wonder what this means for the local communities...

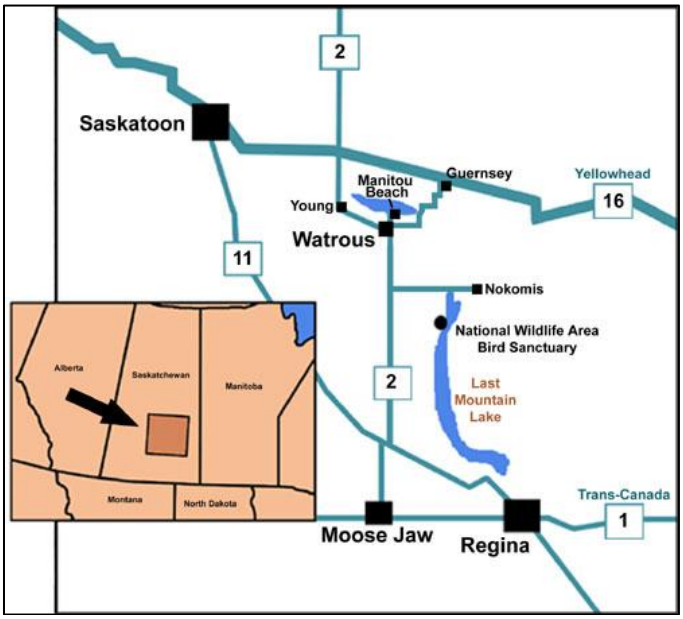
Figure 2: Village of Young

As I drive into Young, I think of the school which has just been closed down. Young is a small village of about 400 people. It is difficult for residents in Young to remain optimistic about the future given the school closure, and a fire recently burnt down the hotel on the main street. However, this adversity is rivaled with strong community spirit and cultural values in the form of resilience, self-reliance, ingenuity, and community-led initiatives. These core values and local initiatives are apparent in the community garden that now sits in place of the old hotel site. Signage on the highway advertises affordable housing as a local developer is working to sell modular homes to attract young families into the community. A large two-story brick building on the corner of Young's main street has been bought by two local men who plan to turn it into a cafe. In addition to these community-led initiatives, the village has a library, bank, post-office, church, village office, seniors' centre, grocery store, and gas station.

Figure 3: Town of Watrous

I continue down Highway 2 past Young to the town of Watrous, about 23 km away (Figure 4). As I enter into town, I am met by a large vehicle dealership and an impressive sized farm machinery dealership. From this, it is evident that the community is resource wealthy, with a strong economic base in agriculture. Watrous is a larger town with about 2000 residents. The main street of Watrous is lined with several businesses including restaurants, banks, clothing stores, seniors' centre, newspaper, bakery, hair salon, bowling alley, pharmacy, grocery store, library, post office, schools, church, medical clinic, and police station. Based on these observations, one may conclude that this community has several amenities and would be a great place to retire.

Figure 4: Map of Watrous and Young (Permission for image received from image source: Watrous-Manitou Beach Tourism, 2011)



On the edge of town, sits the Watrous District Health Complex that provides care to its local residents and nearby communities including Young. This health complex was recently renovated and includes the hospital and a long-term care facility. Through my visits to the community, I have learned of the ongoing issues with physician retention that have posed challenges with healthcare access and availability for older adults. In addition to issues with physician retention, these communities have experienced challenges related to limited seniors' housing, long term care, public transportation, and access to information on existing services and supports for older adults.

As I continue my drive through Watrous, I begin to think about the importance of local geography, weather, and how limited access to health services and supports requires people to travel to access medical specialists, long term care, and at times even family physicians. These limited services contribute to the rural culture found within Watrous and Young. For example, self-reliance and autonomy are essential values when you need to drive in a winter storm to receive medical attention in the city.

I arrive at the hall at 10:00 a.m. in a small community just outside of Watrous and it is frigid, there are no cars at the building. Given this weather, I am worried that the turn-out for coffee will be low. Inside, there is a dimly lit light bulb hanging above a table with a small space heater sitting off to the side. A group of fifteen older adults sit around the table. I am amazed they ventured out and walked in this weather. As I prepare to take off my coat, I notice everyone is wearing jackets and mitts, tightly clasping their coffee mugs for heat. A small collection of dollar coins sit next to the coffee pot, where attendees informally chip in to help cover the cost of coffee. Given the lack of a coffee shop, the group has resourcefully developed their own, informal coffee spot. I leave my coat on and join the group. I am welcomed into the group and offered a steaming mug of coffee. As I sit down, some voice concern of my travels with the wind-chill. I can tell they were awaiting my arrival... I see an issue of my study's newsletter sitting on the table. An older adult jokes about my successful grant application in the newsletter and asks if this means I can now afford to bring Tim Horton's coffee and doughnuts in place of cookies... Laughter fills the room.

This was just one of my many visits to the community, but from this experience and looking back on my study, I found this day particularly memorable. I drove to the hall expecting to see no one, but instead was met with a large group of older adults at the hall. Self-reliance, ingenuity, caring, and a form of hardiness combined with a sense of humor encapsulate the values I observed during my time spent within the rural communities of Watrous and Young, Saskatchewan. These values are corroborated by existing literatures that describes rural culture in North America in terms of independence, self-reliance and autonomy (Averill, 2012; Goins et al., 2011). I return to this discussion of rural culture later on in this chapter.

2.2.1) Saskatchewan Context

In order to understand the community context of Watrous and Young, it is important to have information of the broader provincial context within Saskatchewan, Canada. While many seniors experience challenges related to living in rural communities, recent studies suggest that older adults in rural Saskatchewan are particularly affected by inadequate accessibility and availability to health information and support services (Jeffery et al., 2013c; Lavis & Boyko, 2010). It has been recognized that these issues augment challenges to early diagnosis and treatment of dementia in rural areas. For example, providing dementia care to older adults in rural Saskatchewan has been noted as being difficult due to limited health care providers, widely dispersed populations, and inadequate public awareness and information on dementia (Canadian Press, 2015; Kosteniuk et al., 2015). It is important to note that the definitions of the term "older adult" and "senior" vary considerably. This PhD study used "older adult" and "senior" to refer to a person who is 60 years of age or older (World Health Organization, 2015).

Saskatchewan is a sparsely populated province with approximately 1,147,733 people; 389, 676 people live in towns, villages and rural municipalities of which 95,607 are older adults aged 60 years and older (Saskatchewan Ministry of Health, 2014). Saskatchewan's towns, villages and rural municipalities are aging, with approximately 25% of the population consisting of older adults aged 60 years and older. The province of Saskatchewan covers an expansive area of 651,900 km2 (251,718 mi2) and has almost half of Canada's total cultivated farmland (Saskatchewan Ministry of Agriculture, 2015). Agriculture is the foundation of Saskatchewan's economy and accounts for over one-third of the province's total exports (Saskatchewan Ministry of Agriculture, 2015). Existing literature suggests that rural people in Saskatchewan tend to be proud of their resourcefulness, culture, and distinctness as a province (Government of

Saskatchewan, 2010).

2.3) Study background

This PhD study builds on two previous research projects entitled, *Role of social support systems in the health of seniors living in rural Saskatchewan* (Jeffery et al., 2011) and *Healthy aging in place: Improving rural seniors' health through policy, community and kin-level interventions* (Jeffery et al., 2013c). These research projects were conducted by a team led by Dr. Bonnie Jeffery at the Saskatchewan Population Health and Evaluation Research Unit (SPHERU) and examined the supports and barriers to healthy aging within rural communities (Jeffery et al., 2011). Through these research projects, the doctoral candidate, Juanita Bacsu, spent five years working as SPHERU's research coordinator and primary interviewer with older adults in the rural communities of Watrous, Young, and Wolseley, Saskatchewan.

The foundation of this research began in 2009 with an initial meeting between a prominent community leader, Noreen Johns, and SPHERU researchers including Juanita Bacsu. Following preliminary telephone and email conversations, SPHERU researchers were invited to the community leader's farm for an afternoon lunch to meet. During this meeting, the community leader provided insight on local issues and challenges for older adults living within the rural communities such as limited seniors' housing, home care, and access to support services. This meeting was integral to developing partnerships and local insight within the communities. These partnerships resulted in a successful funding for a pilot study that examined the support systems of seniors in the rural communities of Young, Watrous, and Preeceville, Saskatchewan (Jeffery et al., 2011).

From the years 2011-2014, additional funding was acquired to continue the research and examine the policy, community, and kin-level interventions influencing healthy aging in

Watrous, Young, and Wolseley, Saskatchewan. Although this study did not address cognitive health, many older adults identified issues of limited awareness and the need for more information on cognitive health. For example a rural older adult participant stated, "What if one of us begins to have memory problems or dementia, a brochure would be useful on who do you talk to, how to cope, or how to deal with that?" (Novik, Jeffery, & Johnson, 2015). The need for additional cognitive health training and information for health practitioners was highlighted as a critical issue: 'Cause I went to a doctor and I asked him if I could have something maybe pill or something… "There's nothing you can do" he said.' (Novik, Jeffery, & Johnson, 2015).

In 2012, Juanita Bacsu transitioned from SPHERU's research coordinator to a PhD student working to complete a study entitled, *Perceptions of cognitive health: An ethnographic inquiry of rural older adults,* which built on SPHERU's previous healthy aging studies by addressing the limited awareness and knowledge gaps on rural seniors' cognitive health in Watrous and Young, Saskatchewan. The goal of this PhD study was to examine rural seniors' perceptions of cognitive health to support the development of appropriate programs and strategies aimed at dementia awareness and prevention in rural Saskatchewan.

Prior to beginning this PhD study, Bacsu worked to establish a community advisory committee (Appendix B) which was comprised of three older adults who were local leaders within the communities. Many of the community partners were also involved in the previous healthy aging studies (Bacsu et al., 2014; Jeffery et al., 2011) and had developed strong relationships and rapport with Bacsu over five years. Similar to the community partners, Bacsu had experienced first-hand some of the challenges and issues of having a family member with dementia in a rural community with limited supports and health services. Before beginning the research, a memorandum of agreement (Appendix B) was collaboratively developed to outline

the roles, objectives, and responsibilities of the team including the community partners. The community advisory committee played a key role in providing input, developing local relationships, and supporting the continued entry and acceptance of Bacsu within the rural communities of Watrous and Young, Saskatchewan.

Watrous and Young, Saskatchewan were selected as the research communities for this PhD study to address the identified knowledge gaps on cognitive health (Novki, Jeffery, & Johnson, 2015), and build on Bacsu's five years of relationships developed in these rural communities through the previous *Healthy Aging in Place* study (Jeffery et al., 2013c). Initially, in the pilot study on rural seniors' support systems (Jeffery et al., 2011) only the Watrous location was identified as a research community, but the participants from Young voiced that they too should be recognized as a specific research location as they were involved in the study. Given this background with the previous research, the advisory committee decided it would be a good idea to continue to provide equal recognition and acknowledgement toward each of the communities in the PhD study.

2.3.1) Rural definition

In studying rural communities, it is important to provide a definition of the term "rural" as it has been defined in many ways and there is no universally accepted definition (Hart, Larson, & Lishner, 2005; Kulig et al., 2008; Minore, Hill, Pugliese, & Gauld, 2008; Pitblado, 2005; Pitblado & Pong, 1999). For example, in Canada there are generally six ways for defining rural. These six descriptions use different criteria for rural definitions including: population density; population size; labour market models; residential and settlement patterns; Canada post delivery guides; and various thresholds (du Plessis, Beshiri, & Bollman, 2001; 2002). Definitions often set the parameters of the study and have important implications in the results of the study. For

example, one's rural definition will determine who is included and excluded from the research (Minore et al., 2008).

Building on the work of the *Healthy Aging in Place* study (Jeffery et al., 2013c), this PhD study defined rural as communities with sparse populations across large distances with populations of less than 10,000 people (Rothwell, Bollman, Tremblay, & Marshall, 2002; Statistics Canada, 1998). For example, both Young and Watrous are small rural communities. Young is a small village with 418 residents (Saskatchewan Ministry of Health, 2014), and Watrous is a larger town with 2,126 residents (Saskatchewan Ministry of Health, 2014).

2.3.2) Literature on rural culture

In discussing rural culture, it is important to recognize that rural communities and the older adults within them are diverse (Eales et al., 2006). It is critical not to label or stereotype rural people or communities as being homogenous (Keating & Phillips, 2008). For example, rural communities differ by geography, language, ethnicity, religion, socio-economic status, remoteness, climate, and access to services. Existing literature is limited regarding culture among older adults in rural Saskatchewan, and more generally in rural Canada. However, there are some common themes found in the literature on rural culture within North America.

In the United States, Averill (2012) found cultural values of resiliency, hardiness, and independence among older adults living in rural New Mexico. For example, Averill identified issues of inadequate public transportation, seniors' housing, and limited health and support services for rural older adults. However, Averill (2012) found resiliency in that the rural seniors placed emphasis on their present level of independence rather than focusing on their challenges. Similarly, Goins and colleagues (2011) identified a rural culture of self-reliance, conservative values, and independence among seniors in rural Appalachia. For instance, the authors described

that geographic remoteness and limited services supported values of functional independence due to a greater need and reliance to chop wood or grow a garden. In another American study, Dorfman and colleagues (2004) found that the Great Depression and World War II strongly influenced rural seniors' values in later life. For example, participants described how issues of poverty, famine, and rationing influenced their views on the importance of self-sufficiency, religion, and ability to work (Dorfman et al., 2004). Dibartolo and McCrone (2003) also discuss a rural culture consisting of values of self-reliance, independence, self-sufficiency, distrust of outsiders, and one's ability to do work. The authors suggest that these values of self-reliance and independence contribute to rural seniors' underutilization of formal health services such as preventative screening.

In Canada, existing literature on rural seniors' mental health suggests that cultural values of hardiness and independence can propagate stigma and act as a barrier to seeking mental health services (Caxia, 2016). Likewise, Forbes and Hawranik (2012) suggest that values of stoicism, independence, and self-reliance in rural Canada may contribute to health care underutilization among rural caregivers of seniors with dementia. Additional reasons for underutilization of health services among rural caregivers include perceptions that service use has a stigma of accepting welfare, lack of privacy, limited awareness, and feelings of obligation and responsibility (Forbes & Hawranik, 2012).

Rural seniors' underutilization of formal health services may be strongly tied to factors of geography and issues in access to health services related to inadequate public transportation, poor socio-economic status, hazardous winter weather conditions, dangerous terrains, geographical remoteness, shortage of healthcare providers, limited support services (Forbes & Janzen, 2004), and anonymity concerns within the community (Leipert, 2005). In Canada, the

Romanow Commission found that, "the health of a community appears to be inversely related to the remoteness of its location" (Romanow, 2002, p. 162). Wagenfield (2003) and others (Cohen, Manuel, & Sanmartin, 2015) assert that factors such as remoteness may contribute to the rural characteristics and values of self-sufficiency, autonomy, conservatism, work, religion, and stoicism. Similarly, Slama (2003) suggests that limited services may contribute to rural peoples' "conservative values of approaching life – when you depend so much on yourself, you become more careful and considered in your decisions" (Slama, 2003, p. 10). The author further asserts that self-sufficiency and independence are important values when you live far away from health services (Slama, 2004).

Existing studies suggest that there are strong, traditional gender roles in rural culture, which have been historically detrimental to rural women (Kubik & Moore, 2003; Leipert, 2005; 2003). In 1973, the Murdoch Case made national headlines related to rural women's lack of rights in provincial matrimonial property laws (Murdoch v. Murdoch, 1973). In the past, a rural woman could only own farm property if the property was put in her name, or if the woman financially contributed to purchasing the farm; informal contributions of unpaid labour were unrecognized. In the Murdoch case, the Supreme Court of Canada ruled that a farm wife in Alberta who helped her husband run their ranch had no property rights when her husband divorced her. However, women's rights groups protested which eventually led to changes in provincial matrimonial property laws by 1980, and the farm wife in the Murdoch case received compensation. This case is important in discussing rural culture in Western Canada as it highlights traditional gender roles and societal views on the division of labour in relation to unpaid work provided by rural women.

A study on women's health issues in rural Canada found that cultural values affected by religion and conservative beliefs, influenced women's limited access to information on confidential health services such as abortion and birth control (Leipert, 2002). Slama (2004) asserts that when rural women try to challenge their traditional gender roles (e.g., caregiver, homemaker), family conflict generally arises and often influences the woman to back down. However, over time women's gender roles in rural areas have been changing with an increasing workload. Leipert (2005) and others (Kubik & Moore, 2003) assert that the growing economic costs of agriculture have contributed to rural women undertaking a double workload and more commitments such as paid employment outside of the home in addition to their existing responsibilities related to family, farm, care giving, and the community.

2.4) Conceptual framework: Determinants of Active Aging Framework

With its strong emphasis on the social determinants of health including culture, the World Health Organization's (WHO, 2002; 2015) Determinants of Active Aging Framework was selected as the conceptual framework to guide this PhD study. In the WHO's framework, culture is recognized as a cross-cutting and key determinant of aging. While the framework also recognizes gender in the same way, the focus in this PhD research is on culture. Culture refers to the taken-for-granted perceptions, beliefs, norms, knowledge, and assumptions that people share with others and use to inform expectations, reasoning and everyday tasks (Quinn, 2005). Culture includes the intrapersonal world of cultural values and cognitive structures of the mind, and the extrapersonal world of cultural symbols, and artifacts (Strauss & Quinn, 1997). The WHO's (2002) framework provided a structure for visualizing the overarching importance of rural culture and understanding how it influences other social determinants of health. Perceptions emerge from the cultural context and the value system in which people live, and in relation to

their experiences, standards, and needs (WHO, 2002). The Determinants of Active Aging Framework highlights the importance of culture in aging and states, "culture, which surrounds all individuals and populations, shapes the way in which we age because it influences all of the other determinants of active ageing" (WHO, 2002, p.20). In addition to culture, the framework recognizes seven other social determinants of aging including economic determinants, gender, health and social services, behavioral determinants, social determinants, personal determinants, and physical determinants.

Using the Determinants of Active Aging Framework (WHO, 2002), this research aimed to develop a better understanding of rural older adults' perceptions and practices toward their cognitive health. More specifically, this conceptual framework was used to inform the data collection guides and provide structure for the thematic analysis. Following data collection and analysis, it was anticipated that a study outcome would be an adapted version of the framework to showcase rural older adults' perspectives of cognitive health.

Figure 5**:** World Health Organization's Determinants of Active Aging Framework

(Image source: World Health Organization, 2002, p.19)

2.5) Theory

This study combined lay theory (Furnham, 1988) and cultural schema theory (Quinn, 2005) as a means to accommodate and privilege rural older adults' local expertise and cultural understandings of cognitive health. For example, lay theory recognizes the importance of understanding local knowledge (Bergstrom, Holmes, & Pecchioni, 2000), while cultural schema theory sheds light on the in-depth, unspoken, cultural meanings (Strauss, 2005) that underlie cognitive health perceptions among rural seniors. Subsequently, this study suggests that when combined these two theories provide an invaluable foundation for understanding rural older adults' perceptions toward cognitive health.

2.5.1) Lay theory

Lay theory is broadly described as the informal, common-sense explanations, and mental constructions that people use to describe phenomena (Furnham, 1988). Lay theories are a type of implicit theory that recognize the importance of local knowledge and highlights the perspectives of lay people (Calnan, 1987). Furnham and Anthony (2010) note that the term "lay" refers to people who have not studied formally, read about, or come into in-depth contact with the topic at hand. Lay theories have been shown to provide key insight into health behavior, decision-making, and cognition (Furnham, 1988).

Lay theories challenge formal "scientific" theories and "the impartiality of expert knowledge compared with other forms of knowledge, and raise questions about the extent to which the process of objectification—upon which the truth-claims of scientific knowledge depend—permits a proper understanding of health problems" (Popay, 2006, p.571). Lay theories are created on the basis of shared knowledge, culture, and experiences (Bergstrom, Holmes, & Pecchioni, 2009). Lay theories have been used to provide insight into how people think about

their different aspects of health, ranging from health inequalities to peoples' beliefs of Alzheimer's disease (Furnham, 1988). Lay theories are culturally informed in terms of illness labeling, susceptibility explanations, and treatment options (Furnham, 1988). Lay theories are not homogenous and are diverse across cultures, which emphasizes the importance of incorporating a cultural perspective in exploring lay theories of health (Payer, 1996). Popay (2006) asserts that investigations into health should not be restricted to the realm of researchers, and that the inclusion of lay theories has much to offer the future of population health research.

Jorm, Korten, Jacomb, Christensen, Rodgers, and Pollitt (1997) provide a useful example of exploring lay theories in coining the term "mental health literacy." Mental health literacy is described as peoples' knowledge and beliefs of mental health, prevention, and ability to access mental health information (Jorm, 2000). Mental health literacy incorporates several elements of lay theories of mental health including: beliefs and knowledge of risk factors and symptoms; knowing how to seek mental health information; beliefs of self-help interventions and professional interventions; attitudes that facilitate seeking help if help is necessary; and knowledge of accessing mental health information (Jorm, 2000; Jorm et al., 1997). Research on lay theories and mental health literacy are useful as they may provide valuable insight into understanding stigmatizing views towards cognitive health and barriers preventing early dementia diagnosis.

This PhD study used lay theory to understand rural older adults' perspectives of cognitive health. In comparison to existing studies that focus primarily on the cognitive health views of health professionals (Connell, Kole, Avey, Benedict, & Gilman,1996; Hanson, Hughes, Routley, & Robinson, 2008; Meuser, Boise, & Morris, 2004), this study emphasized the expertise and

significance of rural older adults' perceptions. Guided by lay theory, this study focused on data collection and interviews with rural older adults rather than health professionals.

Lay theory was also used to provide critical insight into how rural seniors think about different aspects of their cognitive health. Similar to Jorm and colleagues (2000), this study used the notion of "mental health literacy" to examine rural seniors' perceptions toward cognitive health. For example, the "mental health literacy" notion was used by incorporating several elements into the data collection guides such as examining rural seniors' perceptions of preventative strategies, interventions, and access to information on cognitive health.

2.5.2) Cultural schema theory

Cultural schema theory is based in cognitive and psychoanalytic anthropology, which works to examine the complex emotional, motivational, and cognitive workings of the human mind by exploring cultural meanings (Quinn, 2005). Cultural schema theory explores the cultural meanings that underlie shared knowledge, experiences, and understandings. Cultural schemas are shared knowledge and ways of thinking that are developed through experiences rooted in culture (Nishida, 1999). For instance, Strauss asserts (2005) that cultural schemas are taken-for-granted meanings, largely tacit, unspoken assumptions that people share with others in their group and use for comprehension, reasoning, and performing day-to-day activities. People depend on these shared meanings and assumptions to form expectations and experiences related to their own feelings, beliefs, actions, and preferences (D'Andrade, 1992). However, it is often difficult to identify cultural schemas as these assumptions are generally unspoken (Strauss, 2005). Quinn (2005) suggests that in order to recognize cultural assumptions it is important to look for cultural keywords, reasonings, and metaphors, as their usage is often out of the participant's conscious control.

This PhD study used cultural schema theory to develop a deeper understanding of rural older adults' meanings of cognitive health. Similar to Quinn (2005), Bacsu paid close attention to the usage of cultural keywords and metaphors during the interviews and data analysis to identify rural older adults' meanings toward cognitive health. These skills were particularly useful for identifying issues of stigma related to rural seniors' cognitive health. For example, one participant stated, "Care giving for someone with memory loss… it's like kicking a dead horse sort of thing, you are not really helping anything by being there so, that's my take on it." This quote draws upon rural North American culture and accentuates stigma where the phrase "dead horse" is used to refer to something that is a lost cause.

2.6) Methods

In order to support community involvement and address the importance of local culture, this PhD study was guided by community based participatory research (CBPR) and ethnographic methodology. CBPR has been defined as a collaborative approach to research that recognizes each partner's strengths and aims to combine knowledge to improve health outcomes and disparities at the population level (Wallerstein & Duran, 2010). Community based participatory research challenges the traditional roles of the researchers and the participants by recognizing the importance of having an equal partnership between all members of the team (Israel et al., 1998; Wallerstein & Duran, 2003). A key benefit of using CBPR is that both researchers and participants provide their expertise to support shared knowledge and capacity building at the community level (Israel et al., 2005). Working in collaboration with local partners increases the feasibility, relevancy, and uptake of the study findings within the community (Padget, 2012).

Eight principles of community based participatory research include: 1) recognizing the community as a unit of identity; 2) supporting equitable and collaborative partnerships in all

phases of the research; 3) building on the strengths, expertise and resources within the community; 4) facilitating co-learning and capacity-building that attends to social inequalities; 5) integrating knowledge generation and interventions for mutual benefit of all partners; 6) involving a cyclical and iterative process; 7) focusing on locally relevant health concerns and ecologic perspectives that address the multiple determinants of health; and 8) disseminating findings to all partners and involve them in the dissemination process (Israel et al., 1998). Israel et al., (2003) suggests that there is no one strict set of principles that will be relevant for all CBPR partnerships, and that each partnership needs to determine their own guiding principles. These principles provide a goal or an ideal standard that teams can work towards in their CBPR endeavors (Israel et al., 2003; 2005).

In this study, CBPR was fostered by having the community partners engaged in all aspects of the research processes, from research design to data dissemination (Table 1).

Table 1: Community Based Participatory Research Examples

Research stage	CBPR examples
Research objective	Involvement of local seniors in identifying cognitive health as a key concern within the rural communities.
Study design & research tools	Study questions and interview guides developed with community partners' input and review. Memorandum of agreement collaboratively developed to outline roles, objectives, responsibilities, and deliverables.
Participant recruitment	Community partners provided guidance with recruitment and retention (e.g., posters, newspaper articles, and food).
Data collection	Community members involved in some aspects of data collection through input into semi-structured, interview guides (e.g., Are there any other questions I should be asking), and concept maps.
Data analysis	Concept maps and community workshops used to engage community members in data analysis, interpretation, and provided member checking.
Knowledge translation (KT)	Community members assisted by identifying appropriate venues (e.g., seniors' centres), methods (e.g., Brain Power Newsletters, newspaper, report, posters, workshops, invites), and decision-makers (e.g., MLAs, MP, Reeves, Mayors, and Health Minister) to support integrated knowledge translation.

This research was consistent with the principles of CBPR by addressing the locally relevant concern of cognitive health in the rural communities, and building on the local strengths and expertise of rural older adults' perspectives of cognitive health. For example, Minkler (2004) suggests that at the core of CBPR is the democratization of knowledge and power, such that "the experiential knowledge of community members is valued and knowledge that previously was the purview of scholars is accessible physically and intellectually to community participants, as well as being relevant to their needs and concerns" (Minkler, 2004, p. 686). CBPR principles were further attended to by facilitating opportunities for collaborative knowledge exchange and iterative processes through the usage of community workshops, concept maps, and face-to-face meetings. Building on CBPR principles, various methods were used to disseminate and share study findings with the communities including local reports, newsletters, presentations, holiday letters with progress updates, posters, and newspaper articles.

Existing literature suggests that key factors that support successful CBPR include fostering relationships with diverse members within the community, being flexible in research methods, recognizing different cultural perspectives, and giving equal importance to community and academic viewpoints (Israel et l., 1998; Katz, 2004). This study worked to develop diverse relationships by meeting with stakeholders from different groups such as the various churches, seniors' centers, recreational organizations, and the town council. This study incorporated flexible research methods by adding the concept map to the second-wave of interviews to enable participants to provide their direct feedback (e.g., drawn, written and oral) in discussing the map. In addition, this research highlights the importance of understanding older adults' viewpoints toward cognitive health within the context of rural Saskatchewan.

Ethnography was used to elicit a better understanding of older adults' cognitive health perceptions in rural Saskatchewan. Ethnography seeks to understand the local culture of a group, such as rural older adults, through long-term engagement and immersion within the community (Green & Thorogood, 2004; Hammersley & Atkinson, 2007). Ethnography recognizes that local culture serves as the foundation for beliefs and standards and is an important influence on peoples' perceptions of health and participation in health care behaviors and decisions (Sellers, Poduska, Propp, & White, 1999). Ethnography has been recognized as being a highly relevant means for studying health and illness perceptions and practices as it allows these issues to be observed in the local culture and context (Savage, 2006).

2.6.1) Data Collection

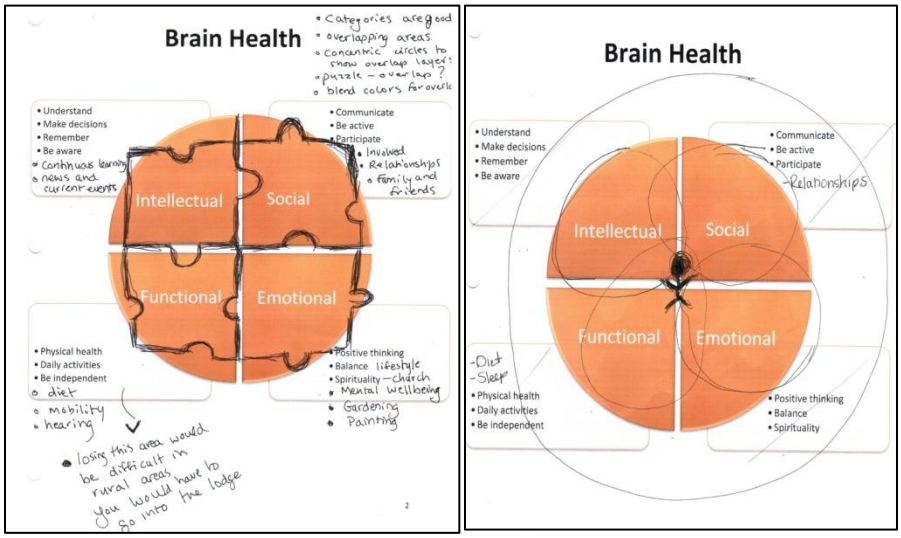
Following ethical approval (Appendix A) from the Behavioral Ethics Board at the University of Saskatchewan (Beh14-19), Bacsu worked with the community advisory committee to recruit older adults in Watrous and Young using multiple strategies including flyers, advertisements, research summary posters, and word-of-mouth. Working in close collaboration with the community advisory committee, participants were recruited.

Data collection in ethnography has been described as "watching what happens, listening to what is said, and/or asking questions through informal and formal interviews, collecting documents and artifacts – in fact, gathering whatever data are available to throw light on the issues that are the emerging focus of inquiry" (Hammersley & Atkinson, 2007, 3). Data collection in this PhD study consisted of two waves of semi-structured interviews with the same group of participants, a concept map (Trochim, 1989), participant observation, and field notes. An overview of the research activities is provided in Appendix C. Two waves of semi-structured, open-ended, face-to-face interviews were conducted to identify any seasonal differences in

relation to older adults' cognitive health. The two waves of interview guides are provided in Appendix E and F. Conducting two waves of interviews with transcription and coding occurring between the interviews, allowed for a more in-depth examination and a form of member checking where the second wave of interviews worked to review and build on the initial study findings. Each interview lasted approximately 40-60 minutes and was conducted in the participants' homes. A list of support services (Appendix G) was developed to offer participants in case any of the older adults were showing signs of distress or anxiety during the interviews. The support services list was not required by any of the participants. The first wave of interviews was conducted in the winter and spring months of February – May 2014, with 42 participants including 28 women and 14 men. The second wave of interviews was conducted in the summer and fall months of July – September 2014, with 37 participants including 25 women and 12 men. Five participants did not participate in the second wave due to illness or unavailability.

Using the key findings from the first wave of interviews, a concept map was developed to summarize the conceptual themes of cognitive health from the first wave of interviews. Concept maps are visual representations used to summarize, organize, and structure the data in the form of conceptual diagrams to identify relationships between concepts (Trochim, 1989). During the interviews, the participants were given a copy of the concept map and provided feedback through discussion with the interviewer, and drawing on the map, here participants posed questions and identified relationships within the data. The concept map summarized key findings from the first wave of interviews, which enabled participants to share insight and reflections on the initial study findings. Figure 6 provides a visual representation of two concept maps with participants' feedback.

Figure 6: Concept Maps



Participant observation was conducted interspersed over a seven-month timeframe with Bacsu spending time with five rural older adults to observe daily happenings, conversations and activities related to their cognitive health (Allan, 2006). Participant observation was used to elicit a better understanding of rural seniors' day-to-day practices and perceptions of their cognitive health.

The five participants were selected based on their willingness to volunteer for participant observation. Three of the participants were women and two of the participants were men and they ranged in age from 75 to 83 years. Two of the participants were widowed and three of the participants were currently married. Participant observation was conducted by spending time in rural older adults' homes, participating in their daily activities, and attending local events. Through participant observation, Bacsu was invited to participate in several activities and social gatherings including birthdays, dances, lunches, walking, bowling, cards, coffee groups, and musical entertainment.

Participant observation was conducted by using a detailed guide (Appendix D) to record the different observations. The observation guide was developed by drawing on existing

cognitive health literature focused on checklists, manuals, and different types of memory aids and cognitive health supports (Alzheimer's Australia NSW, 2011; Canada Mortgage and Housing Corporation, 2008; Wayne, White, & Smith, 2012). Following on the work of Merriam (1988) the guide focused on documenting observations related to three different aspects: the person, household, and environment (e.g., social and physical surroundings). First, data collection included taking details on personal characteristics based on the older adult ranging from demographics to physical appearance (e.g., age, mobility, and medical aids). Second, information was collected based on the household such as the usage and location of memory aids (e.g., key racks, phone lists, calendars, clocks, and pill organizers), artifacts and activities (e.g., reading materials, puzzles, needlework, television programs, computer, phones, and radio) and members of the household (e.g., pets and family members). Third, information was collected on the participant's social and physical environment. For example, data was gathered based on social interactions with others (e.g., who, when, where, and how) and daily activities, and physical surroundings (e.g., location of activity, season, weather, temperature, and time of day). Data on social interaction included nonverbal communication such as body language, silences, pauses, laughs, and length and frequency of the interactions (Merriam, 1988). The participant observation data was recorded into the guide following the observation. This data from the observation guides were then recorded into the field notes. The field notes were used to document details from the participant observation, research activities, and decisions during the research process. The field notes were transcribed and analyzed along with the interview transcripts.

2.6.2) Data Analysis

Thematic analysis was conducted to identify key themes, patterns, and relationships within the data. Thematic analysis was conducted to analyze the different data documents through four stages. First, these documents were read by Bacsu to become fully immersed in the information from the study (Fereday & Muir-Cochrane, 2006). Second, after the initial reading was completed, the documents were re-read to develop a more comprehensive understanding of the data (Gibbs, 2007). After this second reading, a list of codes were developed which was guided by the emerging themes, the Determinants of Active Aging Framework (WHO, 2002), cultural schema theory (Quinn, 2005), and lay theory (Furnham, 1988). Third, Bacsu then organized the data according to the code list with the help of the qualitative software Atlas.ti 7 (Atlas.ti GmbH, Berlin, Germany Version 7). Atlas.ti provides an electronic means for organizing the analytic decisions made by the researcher. During the data analysis, Bacsu utilized cultural schema theory by focusing specific attention on cultural metaphors used by rural seniors to describe cognitive health. To ensure that nonverbal ethnographic data from the participant observation was not lost, a code was created to document nonverbal communication such as body language, silences, pauses, and laughter. For example, nonverbal communication (e.g., laughter, long pause) was included in the field notes based on the participant observation. In addition, Bacsu drew on lay theory and the notion of "mental health literacy" to identify information on rural seniors' interventions, preventative strategies, and access to information on cognitive health. Once the coding was completed, data were reviewed to identify emerging themes, patterns, and relationships. Throughout the analysis, notes were kept to document ideas about emerging relationships and key themes. Strategies such as the community workshops were conducted to share initial findings and engage community members in the process of data

analysis. These strategies provided a means to enhance the accuracy of the researcher's interpretation of the data through member checking and local input.

2.7) Knowledge translation

Through close collaboration with the community advisory committee, an integrated knowledge translation strategy (Canadian Institutes of Health Research, 2012) was developed to share study findings throughout all phases of the research. Collaborating with the community partners helped to ensure that the findings addressed local concerns of cognitive health among rural older adults. In addition, working with the community partners supported the development of relevant and meaningful research materials on rural seniors' perceptions of cognitive health at the community level. For example, a knowledge translation activity included the development of a biannual newsletter entitled, *Brain Power* to share study progress, findings and upcoming events. Appendix D provides a visual illustration of one of the study's newsletters. Local newspaper articles on the study were also a preferred form of knowledge translation as they were an accessible way to share events and research highlights with multiple members of the community from town council to older adults. Additional KT strategies consisted of community reports, holiday cards with study updates, personal invitations, community workshops, posters, media releases, briefing notes, journal publications, newsletter articles, magnets in place of business cards, conference presentations, Twitter, a Facebook page, and presentations at community events such as card games and bowling.

2.8) Summary

This chapter on the context of the study provided information on the study's community partnerships, design, and research processes. Understanding the context of this study is

imperative to understanding the research findings presented in the following chapters. This chapter addressed pertinent information on the research setting in relation to the province, the communities, the people and the local culture. With its strong emphasis on culture and other key social determinants of health, the World Health Organization's (2002) Determinants of Active Aging Framework was selected as the conceptual framework to guide the initial stages of research by informing the development of the data collection guides and thematic analysis. In discussing the theoretical basis of this study, lay theory and cultural schema theory were identified as invaluable in highlighting community-level perspectives and cultural meanings. Lastly, data collection and analysis were discussed in addition to knowledge translation strategies. Although this chapter provides an overview of the study, more in-depth information is provided throughout the subsequent chapters. Highlighting different components of the research (e.g., rigour, data collection guides) in the various chapters enables each manuscript to be unique.

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CHAPTER 3

CONDUCTING ENGAGED SCHOLARSHIP IN COGNITIVE HEALTH: METHODOLOGICAL LESSONS FROM RURAL SENIORS

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This paper addresses the important lessons learned from the study for using engaged scholarship with rural older adults. Five key areas are discussed including the significance of establishing local connections and initial partnership building, conducting locally relevant research, engaging in community outreach, using meaningful data collection methods, and developing community informed knowledge translation strategies.

3.1) Abstract

Engaged scholarship with rural older adults is vital to improving health inequities in rural communities. Developing research strategies that are responsive to the local needs and preferences of a population is essential to success of a study. However, guidance on effective strategies for conducting engaged scholarship with rural older adults is limited. To date, existing studies emphasize recommendations and lessons learned primarily from the perspective of researchers while rural older adults' voices remain largely absent. Drawing on a qualitative cognitive health study, this article discusses methodological lessons for conducting engaged scholarship from the viewpoints of rural older adults. Five key areas are addressed including the importance of establishing local connections and initial partnership building, conducting locally

relevant research, engaging in community outreach, using meaningful data collection methods, and developing community informed strategies for knowledge translation.

3.2) Introduction

Research with rural older adults and other vulnerable populations is vital to improving health inequities at the population level (Averill, 2012; Graves, 2009). As a unique group with specific challenges, rural older adults in North America often experience critical health inequities related to geographic isolation, limited population densities, low incomes, and inadequate access to health and support services (Jurkowski & DeWolf, 2013). Developing research strategies that are responsive to the local needs and preferences of a population is essential to the study's success at the societal level (Merzel & D'Afflittice, 2003; Giunta & Thomas, 2015; Ray, 2007; Smith, Blake, Olson, & Tessaro, 2002).

Recently, there has been an emerging field focused on engaged scholarship (Khanenko-Friesen, 2015) which is using various terms to label this area of inquiry such as "community engagement and outreach" (Harding & Loving, 2015), "community-university engagement" (Brown-Luthango, 2013), "community-engaged research" (Anderson et al., 2012), and "community-campus research" (Phipps, Johnny, & Wedlock, 2015). Engaged scholarship refers to a collaborative approach for conducting research between academic researchers and communities; it involves building partnerships, negotiation, collaboration, and dedication to addressing relevant challenges (McDonald, 2008). Guidance on effective strategies for conducting engaged scholarship with rural older adults is limited (Averill, 2012). Khanenko-Friesen (2015) asserts that engaged scholarship emphasizes the co-creation of knowledge and problem solving, where community members and university members are collaboratively involved in steering the intellectual question, developing and interpreting the findings, and using

the results for diverse purposes. Engaged scholarship exists along a continuum with different levels of participation from the community.

Community based participatory research (CBPR) is an example of engaged scholarship where community members are highly involved, and participate in all stages of the research from question development to knowledge translation (Israel et al., 2005). Some key principles of CBPR include building on the strengths and resources within the community; supporting equitable and collaborative partnerships in all phases of the research; facilitating co-learning and capacity-building around the construction of local health belief theories; striving for balance between research and action for mutual benefit of all partners; focusing on locally relevant health concerns and ecologic perspectives that address the multiple determinants of health; disseminating knowledge and findings to all members involved; and a commitment to sustainability and long-term collaboration (Israel et al., 1998). Rather than focus solely on CBPR and ethnography, this article addresses the broader and emerging field of engaged scholarship and offers methodological lessons from the viewpoints of rural older adults.

Doyle and Timonen (2010) assert that a critical knowledge gap in geriatric literature is the paucity of information on older adults' perceptions of the research processes. Existing studies emphasize recommendations and lessons learned primarily from the perspective of academics, while rural older adults' voices remain largely unheard (Dibartolo & McCrone, 2003). Walker (2007) asserts that older adults' involvement in research creates challenges for gerontologists "because, until very recently, there has been very little published on this topic and very few models of good practice to draw on" (Walker, 2007, p. 481).

In a comprehensive literature review of older adults involvement in health research over ten years, Fudge and colleagues (Fudge, Wolfe, & McKevitt, 2007) found that of the 2,492

citations identified only 35 articles reported involving older adults at any stage of the research process, from determining the research topics through to the design, conduct, and knowledge translation. They also identified a lack of literature on older adults' evaluations, assessments, and feedback on the research processes being used (Fudge, Wolfe, & McKevitt, 2007). Similarly, Blair and Minkler (2009) published a review of participatory research with older adults and found that seniors' involvement in the process of research itself is notably rare. Existing literature suggests that efforts to conduct engaged scholarship with older adults are predominantly "tokenistic" and that more research is needed to support older adults' participation in research activity (Dewar, 2005).

To date, healthy aging policies and programs have primarily been developed by professionals living outside of the communities (Dibartolo & McCrone, 2003; Horowitz, Robinson & Seifer, 2009). These professionals overwhelmingly employ a one size fits all perspective and continue to neglect the needs of rural older adults (Tseng, 2013). For example, Settersten and Angel (2011, 7) note that labels such as the "old" and the "elderly," have led to an artificial homogenization of a diverse population. In Western societies, old age has become synonymous with illness, which has led to an extreme focus on biology (Estes and Wallace, 2006). Furthermore, stereotypes of old age may be distorted by illness such as dementia, which is often thought to reflect normal ageing (World Health Organization, 2015). However, supporting rural healthy aging requires interventions that address non-biomedical issues linked to the social determinants of health related to the economic, political, social and environmental conditions.

Drawing on a qualitative cognitive health study, this article discusses methodological lessons for engaged scholarship from the viewpoints of the rural older adult participants. During the study, the researcher invited suggestions, comments, and feedback in order to continually

improve the study and tailor it toward the cognitive health needs of older adults in rural communities. Rural older adults were asked to share their views and feedback toward the research topic, questions, data collection methods, and knowledge translation strategies. Five key areas are discussed from the study including the importance of establishing local connections and initial partnership building, conducting locally relevant research, engaging in community outreach, using meaningful data collection methods, and developing community informed strategies of communication and knowledge translation. By focusing on rural older adults' perspectives of methodological lessons, this paper provides a novel contribution to the geriatric health literature and the growing field of engaged scholarship.

3.3) Methods

Guided by ethnographic methodology and a community based participatory research approach, the Rural Cognitive Health Study conducted interviews and participant observation with older adults in two rural communities in Saskatchewan, Canada. Two waves of semi-structured, open ended, face-to-face interviews were completed with community-dwelling, rural older adults aged 60 years and older. A total of 42 rural seniors participated in the first wave, and five were unable to participate in the second wave of interviews due to unavailability from illness or travel.

During the interviews, suggestions, questions, and feedback were invited to continually improve and tailor the study toward the cognitive health needs of the rural communities. Rural older adults and community partners were asked to provide feedback and share their views on the research topic, questions, research methods, and knowledge translation strategies. At the conclusion of the interviews, community partners and participants were asked to evaluate the study by addressing questions such as: Did you experience any challenges or barriers to

participating in the study? Are there any other questions that I should be asking? What do you think is the best way to share cognitive health information with older adults in your rural community? Do you have any questions about cognitive health that you would like to learn more about? Do you have any ideas on ways to strengthen this study? Participants and community partners were also asked about their overall satisfaction with the study.

3.3.1) Data analysis

The interviews were audio-recorded and transcribed verbatim. Participants were provided with the option to review their transcripts to confirm accuracy of the information provided. Using thematic analysis, the interview transcripts were analyzed for key themes and relationships within the data. A thorough discussion of the data analysis is found elsewhere in the literature (Bacsu, 20XX).

3.4) Findings

Five key areas are discussed from the study including the importance of establishing local connections and initial partnership building, conducting community relevant research, engaging in community outreach, using meaningful data collection methods, and developing community informed strategies for knowledge translation. Drawing on a rural cognitive health study, older adults' quotes are used to shed light on their perspectives of methodological lessons.

3.4.1) Establishing local connections and initial partnership building: Engaged scholarship takes time

Time is a key component necessary to developing engaged scholarship (Israel, Schulz, Parker, & Becker, 1998), especially with rural older adults (Averill, 2012). Establishing local connections in a rural community requires substantial time to meet, listen, and build trust with local people. In this study, the researcher worked to immerse herself within the rural

communities several years prior to securing funding for the research. This study builds on two previous projects that examined the supports and barriers to healthy aging within the rural communities of Watrous and Young, Saskatchewan (Bacsu et al., 2014; Jeffery et al., 2011). Over five years, extensive relationships were developed in the rural communities through conducting interviews every six months with rural older adults. The prolonged immersion and continual presence within the communities were essential to developing collaborative partnerships and relationships with rural older adults.

Face-to-face meetings were integral to establishing local connections within the rural communities (Adams, Silverman, Musa, & Peele, 1997). For example, prior to beginning the study, several meetings were organized with rural stakeholders such as representatives from the town office, municipalities, local newspaper, and community-based organizations who worked with older adults such as seniors' centres, churches, and recreational organizations. At the meetings, it was useful to provide a short, one page summary that outlined the study's aims, contact information, and proposed methods, using jargon free language. Modifications were made to the study's research questions and methods based on community input and local feedback. For example, some community members recommended that the terminology "cognitive health" be replaced with the phrase "brain health." Face-to-face meetings played an integral role in developing local partnerships, building trust, and fostering community ownership of the study.

A community advisory committee was developed to provide critical input and local expertise throughout the study from the initial research formation to data dissemination. The committee was comprised of three older adults who were local leaders within the communities such as a former mayor. Over five years, strong relationships were developed with many of the

community partners through previous healthy aging research (Jeffery et al., 2011). In addition to the advisory committee, many previous participants from the healthy aging research (Bacsu et al., 2014; Jeffery et al., 2011) offered their knowledge and input to ensure that the research resonated with local cognitive health issues of rural older adults. Over time, the distinction between the community advisory committee and the participants became blended as participants offered their insight, time, and support throughout the study.

3.4.2) Conducting locally relevant research

In conducting research with rural older adults, it is essential that the study is relevant and meaningful to the local communities (O'Shea, Walsh, & Scharf, 2012). Minkler and Hancock (2003) recommend that research topics originate from the community in order to be responsive and address the local needs and issues. Prior to beginning this study, meetings were held with the community partners, and other older adults to discuss cognitive health concerns in the rural communities. Since many rural older adults had lost loved ones and friends to dementia there was widespread support and a shared interest in pursuing this study.

Rural older adults were proud of their involvement and collaboration in the study. A rural older adult stated, "We need to let people know that this research is coming from the community...To let them know that yes we have talked to you and that this information on brain health is important to us." In discussing cognitive health, rural older adults emphasized its local relevance by identifying issues related to a lack of information, fear, stigma, and personal experiences of losing family members and friends to dementia.

Rural older adults described the need for more cognitive health information within the rural communities. A rural older adult commented, "I think memory is the main thing at my stage, maybe workshops on that… I think you'd get a good turnout because that thing is a major

concern here." A rural senior noted, "I would like more information on brain health, like I said I've experienced three Alzheimer's people in my family." A rural senior described the need for more information and responded, "Maybe try to inform people while they still aren't afflicted too badly to give them some ideas as what they might do to try to offset the possibility of dementia." Another rural senior stated, "I think brain health is an important topic, help seniors prepare, have coping strategies and so on... you can't just leave it until it happens."

Rural older adults raised several questions about cognitive health. A rural senior woman questioned, "Should we be trying to exercise our brains to get this better or is it going to get worse...It's a scary thought." An older man commented, "There are people here who are past a hundred and sharp as a tack, there's others who are not even 80 yet and they just aren't with it any more.... So what makes the difference?" Another person declared, "I think most of us want to know how do we keep this dementia or Alzheimer's or whatever from happening." Similarly, a rural senior noted, "I guess the confusion is dementia, Alzheimer's.... Where's the line drawn?"

Fear was prevalent in many of the discussions on cognitive health. A rural older adult commented, "I probably told you that dementia is something that I fear the most about getting old... the idea of not being able to think just scares the hell out of me." A senior woman noted, "I think we all fear it... they're lost, out in the field... Yeah, that I think is happening in our family." An older adult stated, "One of the things that bothers me is that someday I'll get Alzheimer's, then I keep comforting myself, well I won't know the difference anyway."

Issues of stigma toward cognitive health were apparent in many of the conversations with rural older adults. A senior asserted, "A physician, maybe part of the answer, but perhaps you're embarrassed or concerned, I think it's so important to try and get over this stigma but to be able to trust somebody and know that you're not being judged." Similarly another older adult stated, "

We worry about what other people think, sometimes in a smaller town you don't think people have much to do except gossip, and if you're the topic it's horrible."

Many rural seniors described personal experiences of losing close friends, neighbours and loved ones to dementia within the rural communities. An older man noted, "I have a friend who's starting to fail now too... General perception is 'Oh they're getting old,' but then it happens when you're not quite so old yet... I've known several people like that around town, friends, parents." A rural older adult asserted, "A neighbor of ours has gone very rapidly down, basically a vegetable, that I don't want." Similarly, an older adult asserted, "I hope to keep my mind working, you know you're going to get old and physically you're going down but I just hope my mind doesn't go, we've got some friends in town."

3.4.3) Engaging in community outreach

An essential component of building trust and relationships with rural older adults is having a presence and being visible within the community (Martz & Bacsu, 2014). D'Alonzo (2010) asserts that it is vital to attend local activities and events beyond the scope of the research project. Throughout this study, rural older adults commented that they appreciated the researcher's time and interest spent in the community in getting to know them. A rural senior stated, "First I saw you at cards and now at bowling, and I think it is good that you actually have an interest in getting to know our interests and what we partake in." Being in the community supported the development of local trust through social interaction with seniors. A rural older adult noted, "We get carried away talking about this and that, but we enjoy seeing you."

During the study, several opportunities and invites were received to attend events and spend time hanging out with rural older adults to see what day-to-day activities may be contributing to their cognitive health. Some examples of the community functions and activities

attended included card games, birthdays, coffee groups, bakery visits, walking, dancing, bowling, and musical entertainment. Having a strong community presence by attending local events helped to build trust, nurture relationships, and showed interest in learning about the community beyond the research project (Christopher, Watts, McCormick, Young & Building, 2008).

Rural older adults emphasized the importance of getting to know the researcher's background and personal interests in conducting the study. For example, community members appreciated that the researcher had a rural background, and had experienced first-hand some of the challenges of having a family member with dementia in a rural community. A rural older adult stated, "I think it's good that you've got that rural background, because I think it would be very hard for someone that grew up in the city to come out… you don't have that feel for it." Since many seniors had loved ones and friends suffering from cognitive health challenges in rural communities, a mutual interest was shared in pursuing the study. A senior woman noted, "You should get a job with the health region in the city, so you can tell them about our challenges, they don't seem to understand rural life."

Although the participants appreciated the researcher's rural background, any researcher with strong skills in community based participatory research could also conduct this type of research in a rural setting. Israel and colleagues (2005) as well as Minkler (2004) assert that in conducting effective CBPR as an outside researcher there is an essential need for skills in facilitating group dynamics, cultural humility, and fostering continued dialogue for sustainable partnerships. In addressing outsider issues in CBPR such as cultural misunderstandings, community partners can play a vital role in providing experiential knowledge and local insight toward "phrasing the interview questions, sampling considerations, dialoguing about the

findings, returning findings to the community, and using the results as the basis of action..." (Minkler, 2004, p. 688).

3.4.4) Using meaningful data collection methods

Based on discussions with rural older adults, four strategies were used in the study to support data collection methods meaningful to rural adults. This included two waves of semi-structured, open-ended, face-to-face interviews, participant observation, concept maps, and community workshops.

First, rural older adults described that they preferred interviews rather than surveys or questionnaires. For example a rural senior commented, "In surveys it's more, get on, get finished... Okay that's answered, next one, next and in face-to-face interviews you are more capable of bringing in something else." A rural woman noted, "I much prefer the face-to-face... it's just my preference, I do quite a few telephones surveys but I do prefer face-to-face interviews." In discussing questionnaires, a rural senior stated, "Talking one-on-one it's easier than filling out a questionnaire." Rural older adults identified issues of question framing in questionnaires and surveys with limited response options. A rural senior stated, "I don't care for questionnaires or surveys because it's too one sided, it's their view, I did a survey the other day, they structured it in a way where my answers were not there… they don't really want my views."

Participants emphasized that they preferred face-to-face interviews in comparison to research conducted on the telephone. A rural woman stated, "It was nice when you came to our house, we had tea that was good... I think we are so used to doing that, socializing, visiting, talking over the kitchen table." A rural older adult noted, "I like the conversation style, you can pick up so much just by listening to the stories." Another participant asserted, "When they phone and want to do a survey, I want to hang up on them."

Second, rural older adults described participant observation as a valuable method of data collection. For example, rural seniors identified the significance of body language and visual observations. A rural senior noted, "Like you, when you are talking to me, when you ask me a question, I give you an answer and you can pick up whether or not I'm still mulling over something in my head and then get it out... There's body language." Another person responded, "Because you are one-on-one, you even see the facial expressions, people feel more at ease too."

Rural seniors described that participant observation and spending time in the communities was critical to understanding the rural context. A rural older adult commented, "That's certainly one way of you getting to know us better is in our surroundings... It kind of gives you an idea about our experiences." A senior woman stated, "Sometimes it's challenging because there are these people that think, 'Okay, you just phone out to the communities...' But it is a different experience when you are actually in our community." Another participant stated, "I find that even with people I have met, you might become quite good friends, but once you go and see where they are at and can visualize them in their own homes, it gives a different perspective."

Third, rural seniors described that they appreciated the usage of two waves of interviews and a concept map to build on the first wave of interview findings. Conducting two waves of interviews with transcription and coding occurring between the interviews, allowed for more in-depth discussion and a form of member checking where the second wave of interviews built on the initial findings. During the second wave of interviews, the participants were given a copy of a concept map and provided feedback through discussion and drawing on the map. A concept map is a visual representation used to organize, summarize and structure data in the form of a conceptual diagram to identify relationships between concepts (Trochim, 1989). Using first wave interview findings, a concept map was developed to summarize rural seniors' conceptual themes

of cognitive health into a visually accessible framework (Wheeldon and Mason, 2009). The concept map was instrumental in supporting more in-depth and comprehensive discussion in the second wave of interviews. Rural older adults appreciated that they were able to pose questions and provide direct feedback by drawing on the map.

Rural older adults described that they liked how the concept map summarized key findings from the first wave of interviews, which enabled them to share reflections on the initial study findings. A rural older adult stated, "This [concept map] makes it a lot more clear, I like that I can see this... I remember thinking after the first interview that I should have answered some questions differently." A participant commented, "I don't think there's anything missing here at all, it looks pretty well done." Another rural senior asserted, "I think this really makes sense... I mean the categories in this picture make sense to me."

Fourth, rural seniors described that a community workshop or a seminar would allow them to provide insight and give feedback on the study findings. A rural senior stated, "Once you're finished with your research, it would be great to share your findings in a workshop, I think it would work if well you had a group of people together because sometimes somebody will bring up a topic and then somebody else will feed off that." Another rural older adult suggested, "Maybe a seminar or something, seminars would be beneficial as far as I'm concerned."

Building on the rural seniors' comments, this study used community workshops to acquire local insight and discuss the emerging themes from the data analysis. Lassiter (2005) asserts that community workshops or forums are useful for encouraging participation, receiving input on the study concepts, member checking, and identifying concerns with the research

analysis. Accordingly, the aim of the workshops was to acquire insight, stimulate reflection and discuss whether the findings accurately reflected rural older adults' perspectives.

3.4.5) Developing community informed communication and knowledge translation strategies

Participants provided input and local expertise on effective ways to share study findings with diverse audiences including older adults, community leaders, and policy-makers. Rural seniors identified the newspaper as a useful method to broadly share findings. For example, a rural senior man suggested, "You could put an article in the local newspaper, it doesn't have to be all the findings, maybe just the highlights and put a website where people can get more information and print it off if they wish." A rural senior noted, "I guess the newspaper, most of us get the newspaper and read it." Rural seniors discussed potential challenges and limitations of sharing findings in the newspaper. A rural senior commented, "I think that would be really helpful to put an article in the newspaper... But then we may be missing a lot of people that don't take it or can't read it anymore."

The local seniors' centres were identified as valuable local venues to share information with rural older adults. A rural seniors stated, "You should come to the seniors' centre and talk about brain health, and to all the different seniors groups in the province, you should go on tour... I think it would be good if you could give talks on it and it would be wonderful if you provided a book besides giving these talks." An older adult noted, "At the drop in [seniors'] centre...Well that's where I keep up on all the news." Another person stated, "Maybe a meeting at the senior's centre, that would be a good place, I don't know who the current president is but I'm sure they'd be quite perceptive to it."

Coffee and snacks were identified as an essential component to hosting successful gatherings to share information within the rural communities. For example a rural senior stated,

"I think a lot of people would attend a workshop, all you've got to do is have good coffee and cookies... You see rural seniors they have an inkling for an outing... And if they can learn something that's beneficial to them it's a bonus." Similarly, a rural older adult noted, "Just gathering groups of interested people, maybe it's over coffee, maybe it's over lunch… But not in the evening, us elders don't go out in the evenings, especially in winter."

In discussing strategies to share study findings, rural seniors emphasized that they enjoyed the study's biannual newsletter entitled, *Brain Power*. The newsletter was mailed to study participants, community partners, local organizations and leaders to provide updates on study progress and events. A rural senior with a spouse commented, "We like the newsletter. We both read that and in fact we file them away and keep them." Another rural older adult stated, "The newsletter is a good idea, you can sit down and read it... I prefer to get hard copy stuff." Additional knowledge translation strategies included the usage of a magnet instead of a business card. A rural senior noted, "I like the magnet instead of business cards, I don't lose it and keep it here on our fridge... I think you are doing a very good job as far as I'm concerned."

Rural seniors also discussed targeting different audiences by putting up posters to share events and information with various members of the public. A rural older adult commented, "There's billboards around town and then if it's an eye catching poster that could catch their attention but definitely the newspaper." Another person responded, "Put posters up in the different locations… I think word of mouth is important too."

Building on participants' feedback and suggestions, this study used newspaper articles to share findings and study events, such as the community workshops. In addition, posters were used to advertise the community workshops in several locations such as the hair salons, banks, medical clinics, seniors' centres, recreational facilities, rural municipality offices, town offices,

libraries, restaurants, bakery, bulletin boards, grocery stores, and pharmacies. Additional forms of knowledge translation included usage of the local television stations, electronic billboards, towns' events calendars, and local blogs. Personalized invitations were hand delivered in-person by the researcher to local policy-makers, community leaders, and participants for the community workshops.

3.5) Challenges

Some key challenges in the study involved balancing the high expectations from the community advisory committee and the participants. In order to sustain local relationships and avoid unrealistic expectations from the community, it was important to be honest, open, and straightforward about the study deliverables. For example at the onset of the research, a memorandum of agreement (MOA) was collaboratively developed to outline the roles, objectives, responsibilities, and study deliverables. Although the study's deliverables were discussed in advance and outlined by the memorandum of agreement, throughout the study it was necessary to continually reiterate the deliverables of the study in order to balance the communities' expectations.

During the study, it became evident that highlighting study outcomes, actions, and next steps were essential to sustaining momentum, participation, and support within the communities. For example, a frequent question received throughout the study was, "What have you been doing with the study findings?" Over time, several strategies were developed to proactively address this question. Successful strategies included knowledge translation (KT) activities which involved communicating regularly on study updates through multiple methods including the biannual newsletter, local newspaper, reports, and community workshops. A lesson learned was that it was essential to keep the KT material brief, clear and to-the-point as many of the community

leaders, policy makers, and older adults were too busy to read lengthy or jargon-filled documents.

The community advisory committee provided input on how to best reach community members and ensured that the KT material was culturally relevant. Over the course of the study, the community advisory committee became more forthcoming in identifying specific KT actions to support study outcomes. For example, a community partner suggested targeting policy-makers and sending personalized invites to the community workshops with briefing notes to government leaders to facilitate provincial awareness of the study. It was necessary to continually highlight that while it was possible to inform policy-makers of the study's findings this did not ensure any form of policy change.

3.6) Discussion

Existing literature identifies several challenges and barriers to rural older adults' participation in research ranging from issues of trust (Blair & Minkler, 2009; Dibartolo & McCrone, 2003) to geographic isolation (Averill, 2006). Doyle and Timonen (2010) suggest that in order to promote engaged scholarship with older adults more studies need to document and publish effective strategies employed. Subsequently, Ray (2007) asserts that it is essential to learn from others' experiences and evaluate older adults' participation in research activity.

Drawing on a qualitative cognitive health study, this article discussed methodological lessons for engaged scholarship from the viewpoints of rural older adults. Throughout this study, rural seniors provided input, suggestions, and feedback toward various aspects of the study ranging from the research topic to knowledge translation strategies. Five key areas were identified including the importance of establishing local connections, conducting locally relevant research, engaging in community outreach, using meaningful data collection methods, and

developing community informed strategies of knowledge translation. Subsequently, this study provides important guidance and insight for supporting and sustaining engaged scholarship with rural older adults.

Consistent with recent literature (Morgan et al., 2014), this study found that establishing local connections and building community partnerships over time were essential to supporting the study's initial development and formation (Israel et al., 1998). For example, spending time in the rural communities and in-person meetings were crucial to building initial connections and acquiring community insight to ensure that the research addressed the local cognitive health issues (Minkler, 2004). Initial partnership building was further supported by being sensitive and aware of the unique rural context and local challenges faced by the older adults (Averill, 2012).Similar to existing studies (Minkler & Hancock, 2003; O'Shea, Walsh, & Scharf, 2012), participants in this study emphasized the need for research that was locally relevant and meaningful. Wallerstein and Duran (2010) assert that with a CBPR approach, community members work in collaboration with researchers to identify a research topic of importance of local importance with the goal of combining knowledge and interventions to improve health disparities at the population level. Since many rural seniors had lost close family members and friends to dementia, there was a mutual interest in pursuing this research. Throughout the study, rural older adults not only described the need for relevant research but also accentuated the importance of clearly articulating the study's deliverables (Minkler, 2005). For example, the rural seniors did not want to be involved in research for the sake of research but wanted to ensure that there were tangible deliverables and outcomes produced from the study's results.

Dibartolo and McCrone (2003) assert that a potential barrier to rural seniors' participation in research may include a general suspicion toward 'outsiders' and research itself. This study

found that community outreach played a vital role in supporting the development of trust, participation and relationships with rural older adults. Successful strategies used to support outreach included being visible and having a presence, working in close collaboration with community partners, attending local events, getting to know the rural seniors' beyond the scope of the study, and sharing personal background and motivations for conducting the research.

Rural older adults are a heterogeneous population with a diverse range of preferences and skills which needs to be accounted for in terms of the research methods used (Evans, Jones, & Smithson, 2014). Based on discussions with rural older adults, this study worked to employ data collection methods that were viewed as meaningful and culturally appropriate. Rural older adults emphasized the importance of in-person interaction with the researcher being accessible within the rural communities. As illustrated in existing research with rural seniors (Averill, 2006; Goins, Spencer, & Williams, 2011), this study found that qualitative methods with open-ended structures worked well as the participants were not confined to limited response options.

Throughout this study, rural older adults provided key insight to support effective knowledge translation strategies to share study findings. Dibartolo and McCrone (2003) suggest that working in collaboration with rural older adults allows researchers to be sensitive to the local context, specific needs of the older adults and tailor the communication approaches to the requirements of the rural communities. Consistent with existing research (Goins, Spencer, & Williams, 2011), this study found that knowledge translation requires a sustained effort that targets different audiences including the individual, community, and policy levels.

Although engaged scholarship with rural older adults is limited, there are existing models from other fields that can be drawn upon. A relatively unexplored area in gerontology literature is the discussion of Indigenous models to support engaged scholarship with rural older adults.

For example, a growing body of literature on community-based participatory research with Aboriginal Elders provides examples of best practices (Baydala et al., 2013) and lessons learned (Flicker et al., 2015; Loppie, 2013; Tri-Council of Canada, 2014). Flicker and colleagues (2015) note that in Aboriginal culture, Elders have long been viewed as knowledge keepers, wisdom holders, and teachers. The authors further assert that Indigenous principles work to honor the importance of respect, reciprocity, responsibility, humility, and relationships (Flicker et al., 2015). Accordingly, future studies using engaged scholarship with rural seniors may benefit greatly from examining best practices and Indigenous principles for conducting research with Aboriginal Elders (Loppie, 2013).

Gerontology literature is beginning to recognize the practical and ethical imperatives for conducting research with older adults (Doyle & Tomonen, 2010; Giunta & Thomas, 2015). Engaging older adults in research is vital as it provides experiential knowledge toward aging issues that can be improved by modifying environmental, political and socio-economic conditions (Estes and Wallace, 2006; Ray, 2007). For example, Minkler suggests that at the core of CBPR is the democratization of knowledge and power, such that "the experiential knowledge of community members is valued and knowledge that previously was the purview of scholars is accessible physically and intellectually to community participants, as well as being relevant to their needs and concerns" (Minkler, 2004, p. 686).Working in collaboration with rural older adults, enables seniors to share their local experiences and challenges that are often overlooked by outsiders (Evans, Jones, & Smithson, 2014). Horowitz and colleagues (Horowitz, Robinson & Seifer, 2009) assert that research conducted solely by outsiders may propagate health inequities, inhibit local expertise, and impede entry of community based researchers into communities. Given the aging population worldwide and the limited literature on best practices for conducting

engaged scholarship with rural older adults, this study's findings will be of interest to academics, community leaders, and policy makers.

3.7) Conclusion

In order to improve health equity among rural older adults, it is imperative to engage in methodological approaches that facilitate local knowledge and input in meaningful ways. A growing body of literature recognizes the need for more studies to identify key strategies to support older adults' involvement in research (Fudge, Wolfe, & McKevitt, 2007; Giunta & Thomas, 2015). Drawing on a qualitative cognitive health study, this article discussed methodological lessons for engaged scholarship from the viewpoints of rural older adults. Throughout this study, rural seniors provided input, suggestions and feedback toward various aspects of the study ranging from the research topic to knowledge translation strategies. By focusing on rural older adults' perspectives, this paper enhances current methodological knowledge and offers a unique contribution to the geriatric health literature.

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CHAPTER 4

RURAL OLDER ADULTS' PERCEPTIONS OF COGNITIVE HEALTH: TOWARDS A CONCEPTUAL FRAMEWORK

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This paper addresses the dissertation's first research objective by examining healthy, rural older adults' perceptions of cognitive health in Saskatchewan, Canada. Based on the participants' perspectives, a Rural Cognitive Health Framework was developed consisting of four key domains including intellectual, social, emotional, and functional health.

4.1) Abstract

Existing cognitive health literature focuses predominantly on the perspectives of older adults with dementia. However, little is known about the ways in which healthy older adults without dementia support their cognitive health, especially in rural areas. In rural communities, early dementia diagnosis may be impeded by a number of factors that include stigma, cultural obstacles, financial challenges, and inadequate access to health and support services. This paper examines rural older adults' perceptions of cognitive health.

Using a community based participatory research approach and ethnographic methodology, data were collected through participant observation, field notes, and two waves of semi-structured interviews with older adults in rural Saskatchewan, Canada. Guided by the World Health Organization's Active Aging Framework and a combination of lay theory and cultural schema theory, thematic analysis was conducted to identify key themes, patterns, and

relationships within the data. Findings reveal that rural older adults view cognitive health as multidimensional and holistic. In describing cognitive health, a framework of four domains emerged including intellectual health, social health, emotional health, and functional health. Understanding the perceptions of cognitive health among rural older adults informs the development of strategies aimed at dementia awareness, education, and prevention in rural communities.

4.2) Introduction

Cognitive health is one of the most critical issues facing aging populations in Canada (Canadian Study of Health and Aging Working Group, 2000), and globally (World Health Organization, 2012). To date, there is no universally accepted definition of cognitive health. However, researchers at the National Institute on Aging (2013) define cognitive health as one's ability to think, communicate, learn, and remember. It is the basis for how we reason, judge, concentrate, plan, and organize. Cognitive health is a growing issue as the prevalence of dementia rises substantially with age (Alzheimer Society Canada, 2012). Seniors currently make up the fastest-growing age group in Canada, and rural communities are aging faster than urban areas (Statistics Canada, 2011). Dementia among older adults has significant implications for government, healthcare, and community. As health practitioners and policy makers work to address the needs of the rural aging demographic, it is imperative to examine rural older adults' perceptions of cognitive health.

Existing literature on rural cognitive health focuses predominantly on dementia care and health service delivery for those with dementia. More specifically, research on rural cognitive health focuses on three main groups of people, including seniors already diagnosed with dementia (Beard, Fetterman, Wu, & Bryant, 2009; Blackstock, Innes, Cox, Smith, & Mason,

2006; Forbes, Morgan, & Janzen, 2006), family caregivers (Morgan, Semchuk, Stewart, & D'Arcy, 2002; Smale & Dupuis, 2004), and healthcare providers (Connell, Kole, Avey, Benedict, & Gilman,1996; Hanson, Hughes, Routley, & Robinson, 2008; Meuser, Boise, Morris, 2004; Pimlott et al., 2009; Teel, 2004). For example, many rural studies address dementia-related understandings, knowledge, and confidence in diagnosis and treatment among primary care providers (Hansen, Hughes, Routle, & Robinson, 2008; Teel, 2004). In addition, a recent literature review in the United States found that most studies focused on dementia and Alzheimer's disease rather than understanding perceptions of cognitive health more generally (Anderson, Day, Beard, Reed, & Wu, 2009).

There is growing recognition that cognitive health should not be defined merely as the absence of dementia and related diseases (Centers for Disease Control and Prevention, 2007). Similar to physical health, a person's cognitive health is influenced by multiple factors such as social, political, economic, and environmental determinants (World Health Organization, 2001). For example, increasing evidence suggests that social support, education (Hendrie et al., 2006), healthy diet (Bowman et al., 2012), and physical activity (Lautenschlager et al., 2008) may help to preserve cognitive health. Despite this evidence, few studies have examined cognitive health from a social determinants of health approach (Public Health Agency of Canada, 2011). Subsequently, this study aimed to address this gap by using the World Health Organization's Active Aging Framework (WHO, 2002) to examine rural older adults' perspectives of cognitive health using a social determinants perspective. The WHO's framework identifies social determinants of aging, which are embedded in culture and gender including: health and social services, personal, physical, social, economic, and behaviour.

With the exception of the *Healthy Brain Study* in the United States (Laditka et al., 2009), there is limited research on the perceptions of cognitive health among healthy older adults without dementia, especially within rural communities (Wu, Goins, Laditka, Ignatenko, & Goedereis, 2009). Existing literature indicates that inadequate rural access to services affects cultural perceptions, knowledge, and preventive strategies toward specific health issues (Goins, Spencer, & Williams, 2011). For example, inadequate access to services and supports (Averill, 2012; Farmer et al., 2012) may translate into limited usage of diagnostic and healthcare services (Page-Carruth, Windsor, & Clark, 2014). Although rural aging is often viewed from an idyllic standpoint, O'Shea and colleagues (2012) assert that the reality is far more complex especially in terms of the diverse environments and heterogeneity among rural older adults. Exploring the perceptions of cognitive health among specific cultural groups such as rural older adults is critical to developing effective interventions to support cognitive health in rural communities. Using lay theory (Furnham, 1988) and cultural schema theory (Quinn, 2005), this study explores the perceptions of cognitive health among rural older adults without dementia in order to support the development of community-relevant and culturally informed dementia awareness and prevention strategies. Lay theory emphasizes the importance of informal, layperson knowledge, and explanations (Furnham, 1988), while cultural schema theory explores the meanings that underlie shared knowledge, experiences, and understandings (Quinn, 2005). This research has key implications for policy makers, older adults, and health professionals in supporting early dementia diagnosis, awareness, and education in rural settings.

4.3) Methods

4.3.1) Setting

This study was conducted in the rural communities of Young and Watrous, Saskatchewan, Canada. Saskatchewan is a vast province in size with an area of 651,900 km^2 (251,718 mi^2) and has almost half of Canada's total cultivated farmland (Saskatchewan Ministry of Agriculture, 2015). Despite this large size, the province has only one certified Geriatrician and inter-professional dementia diagnostic team that is located within an urban health region (Alzheimer Society of Saskatchewan, 2014).The definition of "older adult" or "senior" varies considerably among different studies. Following on the work of the World Health Organization and the United Nations, this study refers to an older adult as anyone who is 60 years of age or older (WHO, 2015). In this study, rural is defined as communities with sparse populations across large distances with populations of less than 10,000 people (Rothwell, Bollman, Tremblay, & Marshall, 2002).

The rural village of Young has an agricultural-based economy with a population of 418; approximately 108 people (26%) are 60 years of age or older (Saskatchewan Ministry of Health, 2014). The rural community of Watrous also has an agricultural-based economy and the town has a population of 2,126 people; approximately 584 people (27%) in Watrous are 60 years of age or older (Saskatchewan Ministry of Health, 2014). Both of these rural communities have considerably higher percentages of older adults than the provincial average (20%) of older adults aged 60 years or older (Saskatchewan Ministry of Health, 2014).

4.3.2) Participant recruitment

This research built on the Healthy Aging in Place study (Jeffery et al., 2013) by continuing to work with older adults in the rural communities of Watrous and Young,

Saskatchewan. Through this previous research, extensive community partnerships with local leaders, health professionals, older adults, and local policy-makers were developed. Over five years, strong connections with rural older adults in Watrous and Young were established, by conducting in-person interviews every six months and frequent knowledge dissemination activities such as community workshops, local presentations, and newsletters.

Unlike existing cognitive health studies which focus primarily on caregivers, health professionals, or older adults with dementia, this study recruited healthy older adults without dementia. Community partners helped to recruit potential participants while paying close attention to ensure representation of key variables, such as age and gender. Many of the rural older adults who were recruited in this study also participated in the previous longitudinal Healthy Aging in Place study (Jeffery et al., 2013). This immersion with many of the participants over time helped to foster strong relationships and the ability to conduct an ethnographic study. This study was conducted in close collaboration with the community partners throughout the recruitment process and engaged in regular conversations to discuss any potential challenges or questions.

Once potential respondents were identified, the community partners explained the purpose of the study using a recruitment script as a general guideline. The community partners asked whether community members were interested in participating in the study and whether they would like their names and phone numbers passed along to the researcher for follow-up. The researcher then contacted the potential participants to ask whether they were interested in taking part in the study. Once initial acceptance was provided, the researcher arranged a meeting time to go over the official consent form and provide more information about the study. This

study was approved by the Behavioral Research Ethics Board (Beh14-19) at the University of Saskatchewan.

4.3.3) Data Collection

Using ethnographic methodology (Quinn, 2005) and a community based participatory research (CBPR) approach (Israel et al., 2005), data collection included participant observation and semi-structured, open-ended interviews. In this study, CBPR was fostered by having community partners involved in all stages of the research processes from research design to data dissemination (Israel et al., 2005). Participant observation was conducted by spending time with five older adults in their own homes and around the rural communities to observe day-to-day activities in relation to their cognitive health. Semi-structured interviews were conducted in two waves to observe seasonal changes in relation to participants' cognitive health perceptions and activities. The first wave of interviews was conducted with 42 participants aged 60 and older in Watrous and Young from February to May, 2014, and a second wave of follow-up interviews was conducted with 37 of the same participants from July to September, 2014. Five participants did not participate in the follow-up due to illness or unavailability.

Semi-structured interview guides were used to facilitate the interview process and the guides were pilot tested to ensure clarity of the interview questions. After the pilot testing and during the interviews, the phrase "brain health" was used in place of "cognitive health" as it was viewed by the community partners as more accessible language. The semi-structured interview guide for the first wave was developed by drawing on the World Health Organization's Active Aging Framework (WHO, 2002), and a combination of lay theory (Furnham, 1988) and cultural schema theory (Quinn, 2005) to examine rural seniors' cognitive health perceptions in relation to the active aging determinants of health. For example, the WHO's Active Aging Framework

helped to guide the interview questions related to the social determinants of active aging. Lay theory (Furnham, 1988), and cultural schema theory (Quinn, 2005) were used in combination to inform questions focused on understanding rural seniors' perceptions, informal explanations and shared knowledge of cognitive health.

The interview guide for the second wave was created by building on the first wave of interview findings. For example, in the second wave interviews, concept maps were used to clarify initial findings, and further elicit information on rural older adults' perceptions of cognitive health. Concept maps are visual representations used to organize and summarize data in the form of conceptual diagrams to identify relationships between concepts (Trochim, 1989). In this study, a concept map was used to summarize key findings from the first wave of interviews. During the interviews, the participants were given a copy of the concept map to provide feedback through discussion with the interviewer and by drawing on the map. This enabled participants to identify relationships, pose questions, and share direct insight in the development of the conceptual framework. Each of the interviews was approximately one hour in length and occurred within the homes of the older adults.

4.3.4) Data analysis

Guided by the WHO's Active Aging Framework (2002) and a combination of lay theory (Furnham, 1988) and cultural schema theory (Quinn, 2005), thematic analysis was performed to identify patterns, themes, and relationships in the data. Thematic analysis was conducted to analyze the field notes that included the participant observation notes, and interview transcripts through the following four stages. First, the different data documents were read to become fully immersed in the information from the study (Fereday & Muir-Cochrane, 2006). Second, after the initial reading was completed, the documents were reread to develop a more comprehensive

understanding and immersion within the data (Gibbs, 2007). After this second reading, a list of codes was developed which was guided by the emerging themes, theories and the Determinants of Active Aging Framework (WHO, 2002). For example, the WHO's Framework was used to inform the development of the codes related to the social determinants of health, while lay theory and cultural schema theory were used to inform codes related to understanding rural seniors' perceptions, informal explanations (Furnham, 1988), shared experiences, and knowledge (Quinn, 2005). Third, the data were then coded according to the code list using Atlas.ti 7 (Atlas.ti GmbH, Berlin, Germany Version 7). Fourth, once the coding was completed data were reviewed to identify emerging themes, patterns, and relationships. Following data analysis, community workshops were held to share findings and ensure that the interpretation of the data resonated with the participants.

4.4) Findings

Interviews, concept maps, and community workshops provided key insight on rural older adults' perceptions of cognitive health. The Rural Cognitive Health Framework (Figure 7) was developed from the study's findings that consisted of four key domains: intellectual health, social health, emotional health, and functional health. In developing the framework, rural older adults emphasized diversity, multidimensional domain terms, and interconnectedness.

The diversity in rural older adults' perceptions of cognitive health was addressed in discussing the framework. A rural senior stated, "What's important to me, what's number one, could be number three for somebody else..." and "Of this quarter pie, I might say that functional might be here and then others would say social would be." Another respondent emphasized diversity among rural seniors in the framework and stated, "The picture is not going to be the same for everybody, we need a person in the middle." In order to highlight diversity in rural

seniors' perceptions of cognitive health, the framework was adapted by adding a person to the centre of the framework.

Participants highlighted the need for multidimensional and inclusive domain terms in the framework. A rural senior stated, "The titles are actually fairly good, they encompass a lot of things and so we have to have the headings and then you can put the different things underneath." Likewise a participant noted, "Those are four categories that sum up pretty well everything, every one of them is important especially when you live alone, that you get along with every one of them." Another rural older adult asserted, "Well I think these four groupings kind of hit all the areas that affect brain health… I think it is all kind of covered there." Each of the four domains are addressed in more detail below.

Rural older adults discussed the specific titles used for each of the domains. For example, rural older adults described functional health beyond the general academic definition that often refers to activities of daily living (ADL) (Whittle & Goldenberg, 1996). Although academics may view the title "functional health" in terms of ADL's, rural seniors described it in relation to one's ability to function in relation to decision-making, physical health and independence in day-to-day activities. For example, a senior stated, "Functional [health] seems to cover it well, you wouldn't say physical, it would only partly be physical to be independent... But I think functional covers it better, it's more inclusive." The phrase "functional health" was chosen for the domain title as the word "function" was frequently used in rural seniors' descriptions of cognitive health. A rural senior stated, "I think you need a healthy brain to function, to be able to do things that are going to affect your day-to-day life." Another replied, "I guess how you function with your brain and how active you are with everyday stuff, you've got to keep up with that."

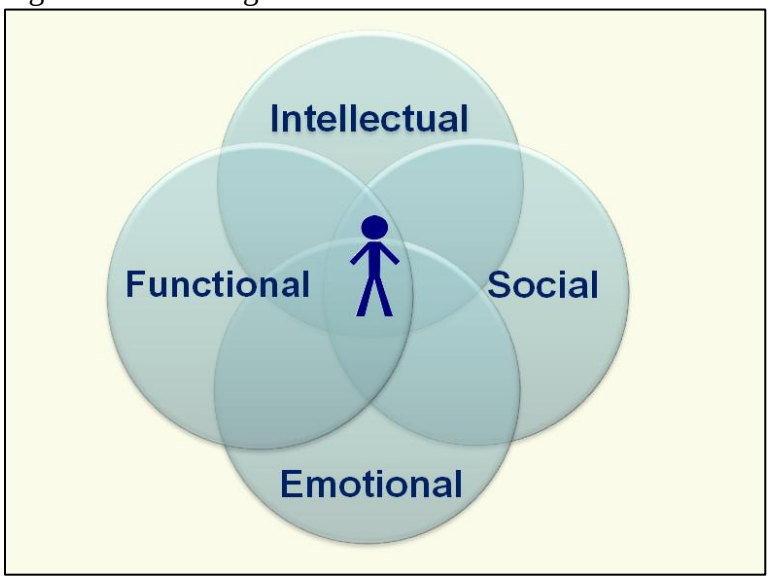
In developing the framework, seniors described the need for simplicity, conciseness, and

accessibility. A rural older adult noted, "I think we have got everything covered... It's concise, it's easily understandable, we are not using what we call in my field a $50 word that people don't understand, that's the thing, to be easily understood." Similarly a rural senior man asserted, "I did critiques of grammar textbooks one time and above all keep it simple, because every one of those books I rejected had great fancy colored diagrams with writing all over, but people look at them and think how do we look at that… it's got to be really simple." Another participant commented, "You don't want it too cluttered with words because then it gets overcrowded, I think keep it quite clear." A rural senior woman stated, "Remember who's coming to these workshops and these are older people, their vision won't be that good... Keep it clear, simple and use bright colors, so it's usable by the communities." Building on the participants' comments, the framework was made to be clear and concise by limiting the use of words to the four domain titles.

Participants emphasized the interconnectedness, overlap, and holism among the different domains in the Rural Cognitive Health Framework. A rural older adult stated, "When you showed me this, what struck me is it's rigid and separated... I would say this is too rigid, square and too perfect, but they all fit together and there is overlap... maybe use circles or make a puzzle out of it." A participant commented, "It's all together, one compliments the other... No one can stand by themselves, one impacts everything." Another rural senior asserted, "It's not cut and dry like this, don't make it so square, boxy and straight, make it fluid, because they are connected." Drawing on the respondents' feedback, the framework was improved by changing the separate and square boxes into overlapping circles to highlight the overlap and interconnectedness of the framework's domains. The color was changed to fade into each of the domains in order to emphasize the linkages and overlap among the cognitive health domains.

The final version of the Rural Cognitive Health Framework (Figure 7) highlights rural older adults' perspectives toward cognitive health, which consisted of four key domains: intellectual health, social health, emotional health and functional health. These domains will be defined and discussed in detail using participant quotes and phrases to exemplify the perspectives of the rural older adults.

Figure 7: Rural Cognitive Health Framework



4.4.1) Intellectual health

Rural older adults defined intellectual health as including memory, comprehension, awareness, mental stimulation, and continuous learning. Many participants discussed memory as a key component of intellectual health. For example, one participant stated, "Brain health means memory, and being able to think clearly." Another participant noted, "I think the first thing that you think about is memory, you want to keep your memory as long as you can." Participants highlighted that the ability to remember names, tasks and people was of central importance. One senior man said, "It means next week if I see you downtown I'm going to remember who you are."

In discussing cognitive health, respondents emphasized the importance of comprehension. An interviewee commented, "Well, I think that's the ability to still be able to read, to do mathematics, to do thinking, analyzing things and being on top and remembering any type of thing." Another said, "So I can comprehend what I hear and what I read." Many people highlighted the necessity of thinking clearly in regards to comprehension. One senior woman noted, "Being able to think clearly, no fog" while another senior responded, "having a mind that is sharp and clear."

Several of the participants discussed awareness and keeping informed of current events in describing intellectual health. One woman stated, "It means keeping up and knowing what's going on in the world, I read a lot and I try to keep my memory sharp." Another participant stated, "It means being informed, know what's going on around you and handling difficulties that come up." In commenting on awareness of current events one senior man expressed, "I guess it would be information processing, I get the newspaper every day and I read most of that, I get a weekly paper in town here."

Being engaged and interested in the community was highlighted as key to intellectual health. One man stated, "Take an interest in what's going on in town.... When people withdraw and stay within themselves or their own home, you lose your mental capacity quicker because you're not stimulated." Another older adult responded, " When there's something going on in town rural people all want to get there because we think we're lucky to have this come to town." In describing intellectual health, one senior noted, "It means if you're interested in what is going on around you."

Many of the respondents discussed the value of mental stimulation and continuous learning. An older adult commented, "I think a person should stay as active as you can, exercise,

and try to stay mentally active." A senior man noted, "I like to keep myself active in the line of reading, and I like reading." Continuous learning was viewed as essential to cognitive health. One respondent commented, "If something new comes up, I like to be brain healthy enough to delve into it and learn." A woman stated, "I suppose anything that you have to really work at to learn is probably a good thing, like me trying to play piano by ear." Accordingly, many rural older adults felt that continuous learning provided them with opportunities to enhance and sustain their intellectual capacity in old age.

4.4.2) Social health

In discussing cognitive health, rural older adults identified the importance of social health. Social health was often described by participants in terms of interaction with others and social gatherings outside of the home. An older woman stated, "I feel a lot of brain health is due to mingling with other people… You're socializing, but you've also got to get out of your home." An older man commented, " Just getting out and about, visiting with people and talking, that social kind of thing." Another participant stated, "I think you have to be involved because if you sit at home by yourself I think you would just go downhill." In contemplating cognitive health, an older man asserted, "I think the more active you are and the more you mix with people, go to a coffee shop and discuss the news in the morning or whatever, the better." Social interaction outside of the home was viewed as a key way to strengthen social networks and connections within the community.

Communication and conversing with others was articulated in describing cognitive health. For example a participant stated, "I think it's really important to communicate with others and be active." A senior woman asserted, "If you're just going to sit in your own little space and not communicate with other people, then I think you're going to go bonkers." Another

older adult commented," I think the key to having good brain health is if you're healthy and you're active and you read and hold conversations."

Several participants discussed keeping active and involved in the community. For example, a participant noted, "I think you've got to keep active and involved, I go to coffee six days a week, I think it stimulates your brain when you are talking to different people." Rural older adults also used cultural metaphors and idioms (Quinn, 2005) in expressing the need to remain active. For example a rural senior commented, "I think to keep your brain in motion, be active, if you sit at home like a vegetable, you're not going to interact with anybody." In this quotation, the vegetable is used to imply no activity.

Social isolation and loneliness were identified as challenges to maintaining social health. Participants identified winter weather conditions, geographic remoteness, immobility, poor health, and living alone as barriers to maintaining social health. In discussing the influence of winter weather and geographic distance, one participant noted, "Snow was four feet high, minus 30 [degrees Celsius], it's not good for the brain especially on a farm, when you don't see people."

Some participants highlighted the detrimental impact on cognitive health of living alone in their own homes. A participant noted, "Now they're saying people are happier in their own homes, I think the bad part of it is that you don't have enough intermingling with other people, you tend to be alone." Similarly an older adult responded, "I have friends that are in their homes, but they're going downhill…Not so much physically, but mentally because they don't have interaction with other people." A rural older woman asserted, "I think of people sitting in their house...How can you communicate except to yourself, you can't stay alert and you're not happy

because you're by yourself." Accordingly, seniors' housing with communal spaces, organized activities, and mobility supports were described as being critical to older adults' cognitive health.

4.4.3) Emotional health

Participants viewed emotional health as a key domain of cognitive health. Emotional health was often described by participants in terms of mental well-being, and having a positive outlook on life. One participant stated, "I think a lot of it depends upon a person's attitude and whether you're happy and whether you're a glass half full type of person." Another senior acknowledged, "I think thinking positively helps a lot to support your brain health."

Rural older adults accentuated the value of being "young at heart" and feeling younger than one's age. A senior woman shared a story of her mother who was in her mid-70's and refused to go to the seniors' centre because she viewed it as a place for old people. The participant further commented, "My mom lived until she was 96, she still didn't believe she was old and she never gave up being young." Another participant highlighted that age should not determine your abilities, and she asserted, "Don't say well I'm 79, I can't do that anymore."

Respondents emphasized the importance of not feeling sorry for oneself and putting one's challenges in perspective of others' adversity. A senior stated, "I think one of the most important things is positive thinking, you can't feel sorry for yourself… All you need to do is go to a nursing home and look around and see people your age or younger and know how lucky you are." Another older adult noted, "When I feel sorry for myself I just think of other people in this world, I just put on the news and I see these people and children at war… we are fortunate to have freedom." A senior woman emphasized the importance of recognizing others' hardships and commented, "I think that that's important, to think about the other people that have problems, it's not only you."

Depression was identified as a challenge to maintaining a positive outlook on life. One senior stated, "I feel if you're not happy, you're really not healthy because you don't tend to eat properly… And the less you do, the less you want to do." Another older adult noted, "Well I think the people who are depressed, we have one lady that used to come for cards at the seniors center and she really doesn't anymore... she is pretty much withdrawn and just sits at home by herself, she doesn't even go to church." Additional challenges to having a positive outlook on life included poor personal or spousal health, mobility challenges, cold winter months, death of a spouse or friends, poor finances, inadequate public transportation, limited seniors' housing, and spouses who are separated from each other to be moved outside of their community for long-term care.

Spirituality and religion were often highlighted in participants' discussion of cognitive health. Spirituality was not discussed as often as the four domains and was addressed as more of a sub-theme of emotional health. In discussing cognitive health one participant noted, "It's a very important part of our life to be involved in the church." The importance of spirituality and religion were exemplified in many of the discussions through phrases such as "for the grace of God," and "we are blessed."

While some participants discussed spirituality in terms of religion others discussed it in broader terms related to discovering a sense of purpose, self-acceptance, and meaningfulness in their lives. Respondents described having an interest in spirituality given their age and wondering what happens in the afterlife. For example one woman commented, "Spirituality, that's another interesting thing because I think when a person gets older you begin to think about what is life? What is it all about? It's a journey." In describing emotional wellbeing and spirituality, some participants emphasized the importance of aging and embracing one's identity

through self-acceptance. One senior noted, "I think that by the time we get to this age we understand ourselves a lot better… I guess when we get to this age we think well, I am just going to be me and if that isn't good enough, then that's too bad."

4.4.4) Functional health

Functional health was recognized as another domain of cognitive health. In describing functional health, participants emphasized the importance of personal freedom and daily decision-making. One senior man stated, "It's about looking after your own financial affairs and the day to day decisions and just basically being able to manage on your own without depending on someone else." Another participant commented, "It really gives you freedom because then you can make your own choices, all your life you've done things for yourself … It's probably the most important area we deal with." Similarly in describing cognitive health, a participant stated, "It means whether you're still able to make your own decisions and whether your judgment is still good."

Many older adults emphasized the necessity of functional health in relation to maintaining their activities of daily living. For instance, a respondent noted, "I think you need a healthy brain to function, to be able to do things that are going to affect your day-to-day life." Another replied, "I guess just being able to get along with your daily affairs and with all the things you have to remember." In describing cognitive health, a participant stated, "I guess how you function with your brain and how active you are with everyday stuff, you've got to keep up with that."

Several participants referred to physical health and physical activity in describing functional health. For instance, a senior responded, "I'm thinking if you keep physically active then hopefully that helps to keep your brain active as well, and I suppose diet and all those kinds

of things contribute." Participants with limited mobility and chronic pain found it difficult to be physically active.

4.5) Limitations

Although this study provides in-depth knowledge on rural older adults' perceptions of cognitive health, this research has limitations. This study was conducted in two communities in rural Saskatchewan and may not be representative of other rural communities. For example, rural older adults' perceptions of cognitive health may be different among communities of high and low socio-economic status. Future research is necessary to test the relevance and applicability of the Rural Cognitive Health Framework among older adults in other rural communities. More specifically, research is needed to assess how each of the domains is conceptualized among heterogeneous rural older adults and within different cultural contexts (O'Shea, Walsh, & Scharf, 2012). Further research in this area will provide more in-depth understanding and insight toward cultural variations in rural older adults' perceptions of cognitive health, which is considerably timely given the increasing numbers of projected rural seniors worldwide.

Another potential limitation of this study is that the lay framework domain titles may be misinterpreted by academic researchers. For example, researchers may see the "functional" domain and assume it merely refers to activities of daily living rather than rural seniors' more comprehensive understandings of functional health. Since the framework was intentionally developed to be simple and accessible with limited word usage, there is nothing to signal to the viewer that rural seniors conceptualize these terms in a different way. Subsequently without an in-depth explanation, there could be loss of meaning if an academically oriented person viewed the framework and applied their definitions to the domains.

4.6) Discussion

Unlike existing research which focuses on understanding rural older adults' cognitive health primarily in terms of dementia care (Beard et al., 2009; Blackstock et al., 2006; Smale & Dupuis, 2004; Connell et al., 1996; Hanson et al., 2008; Meuser, Boise, & Morris, 2004; Pimlott et al., 2009; Teel, 2004), the rural seniors in this study emphasized the need to define cognitive health in terms of its holistic, diverse, and multidimensional nature. Although dementia is an important aspect of cognitive health, this study's findings indicate that it should not provide the foundational basis for understanding older adults' cognitive health. The predominant focus on pathology in the current literature fails to recognize that cognitive health is more than the absence of disease. Similar to the World Health Organization's definition of health as: "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 2001, p.1), rural older adults' in this study emphasized that cognitive health consists of multiple domains ranging from intellectual health to social health.

This paper contributes to the limited research on cognitive health perceptions among different cultural groups (Laditka et al., 2009; Friedman, Laditka, Laditka, Wu, Liu, Price et al., 2011), by examining rural older adults' perceptions of cognitive health. This study locates rural seniors' perceptions within a framework for understanding cognitive health. Developed in collaboration with rural seniors, the Rural Cognitive Health Framework recognizes that cognitive health is multidimensional and encompasses various domains. In this study, rural older adults identified four key domains of cognitive health including intellectual, social, emotional, and functional health.

These domains are relatively consistent with the limited literature on healthy older adults' perceptions of cognitive health (Laditka et al., 2009). For example, Ladikta and colleague's

(2009) Healthy Brain study focused on racially and ethnically diverse seniors' perceptions of aging well within the context of cognitive health and identified six domains including cognitive alertness and good memory, social involvement, positive mental outlook, living to an advanced age, spirituality, and physical health. Consistent with Ladikta and colleague's (2009) research, this study found that in describing cognitive health rural seniors addressed the importance of social interaction, intellectual health, and emotional wellbeing.

In contrast to other research on cognitive health perceptions (Laditka et al., 2009), this study found that the participants placed emphasis on functional health rather than physical health. For example, rather than limiting the domain of functional health to physical health (Laditka et al., 2009), rural seniors described self-reliance, autonomous decision-making, and independence as having utmost importance. Subsequently, rural older adults discussed physical health as a sub-domain to supporting their independence and ability to function. This finding is consistent with data from a systematic review of the literature on rural perceptions of health that found that rural populations tend to emphasize functional aspects of health, especially in relation to one's independence, ability to work, and self-sufficiency (Gessert et al., 2015).

Given the aging demographic in rural areas, this study has important implications for policy-makers, health practitioners, and community leaders. In order to support cognitive health in rural communities, it is essential to collaborate and listen to the perspectives of rural older adults. Recognizing rural seniors' viewpoints facilitates the development of community-relevant and culturally informed strategies to support rural cognitive health. For example, input from local seniors helps to inform cognitive health communication messages, dissemination methods, and ensure that educational materials are more salient and culturally appropriate (Alzheimer's Association & Centers for Disease Control and Prevention, 2013). Understanding rural seniors'

perspectives of cognitive health is critical to developing appropriate programs and strategies to support dementia awareness, education, and prevention in rural areas.

4.7) Conclusion

This study's findings identify rural older adults' perspectives of cognitive health. From the participants' responses, the Rural Cognitive Health Framework emerged which highlighted the holistic, diverse, and multidimensional nature of cognitive health. Rural older adults identified four key domains of cognitive health ranging from intellectual to social health. By focusing on the viewpoints of rural seniors, this framework facilitates the development of culturally informed and community-relevant knowledge to support cognitive health. Understanding cognitive health perceptions articulated by rural older adults supports the development of appropriate programs and strategies aimed at dementia awareness, education, and prevention in rural communities.

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CHAPTER 5

RURAL OLDER ADULTS' PERSPECTIVES: INTERVENTIONS TO SUPPORT COGNITIVE HEALTH

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This paper addresses the dissertation's second research objective by examining how older adults maintain and support their cognitive health within rural communities. Building on the Rural Cognitive Health Framework discussed in the previous chapter, this paper examines rural seniors' cognitive health interventions in relation to the framework's four domains of social, emotional, functional and intellectual health.

5.1) Abstract

Cognitive health is a growing concern among older adults worldwide. In the cognitive health literature, the vast majority of research has focused on understanding the pathology and biomedical treatment of dementia rather than preventative interventions and programs, especially within rural communities. Through participant observation and semi-structured interviews with 42 participants, rural older adults shared their perspectives of interventions to support preventative strategies and awareness in rural communities. As policy makers, community leaders, and health professionals work to address the needs of the rural aging demographic, it is imperative to identify preventative programs and interventions to facilitate rural older adults' cognitive health.

5.2) Introduction

Cognitive health is a growing concern among older adults worldwide (World Health Organization, 2012). Globally, it is estimated that over 46 million people have dementia and that this number is projected to increase to 131.5 million by 2050 (Alzheimer's Disease International, 2015). The prevalence of dementia rises significantly with age, and the rural demographic is ageing faster than their urban counterpart (Statistics Canada, 2011). After age 65, the risk for developing dementia doubles every five years (Alzheimer's Society Canada, 2012). Dementia is a major cause of disability and morbidity among older adults (World Health Organization, 2012), especially in rural communities.

The economic impact of dementia is substantial. The estimated global cost of dementia is US $818 billion, and it is projected to become a trillion dollars in 2018 (Alzheimer's Disease International, 2015). The burden of dementia extends to governments, families, and communities. The increasing prevalence of dementia combined with the outward migration of youth to urban centres, and the shortage of rural caregivers, further compounds the detrimental impact of dementia in rural communities (Thorpe, Houtven, Sleath, & Thorpe, 2010).

In the cognitive health literature, most research has focused on understanding the pathology and biomedical treatment of Alzheimer's disease and other types of dementias, rather than prevention. For example, extensive research has been conducted to address the epidemiology, pathology, clinical characterization, and assessment of different types of dementia among older adults (Hogan, Bailey, & Bailey, 2008; Kumar & Ekavali, 2015). Epidemiological research has documented biomedical risk factors for developing dementia including cardiovascular health, head injury, age, family history and genotype, and other comorbid mental and non-mental diseases (Yen, et al., 2010). In a literature review, Peterson and colleagues

(2009) assert that research on the early clinical characteristics of dementia has become a primary focus of epidemiological, neuropathological, biomarker, disease mechanism, and clinical trial research.

There is a paucity of knowledge on preventative interventions to support and sustain cognitive health among healthy older adults without dementia. Emerging research has introduced the concepts of neuroplasticity and neurogenesis, which highlight the importance of and possibility for interventions in supporting cognitive health (Williams & Kemper, 2010; Smith, 2013). Neuroplasticity suggests that the brain is able to adapt and grow while neurogenesis implies that the brain has the ability to develop new neurons to support cognitive function even in old age (McDougall, 2009). There has been a change in viewing cognitive aging as an unavoidable process (McDougall, 2009), and a growing interest in the use of innovative interventions to support and maintain older adults' cognitive health (Hosking, Sargent-Cox, & Anstey, 2015; Institute of Medicine, 2015; Reichman, Fiocco, & Rose, 2010; Williams & Kemper, 2010).

Existing literature on cognitive health focuses primarily on biomedical treatment and the pathology of dementia (Kumar & Ekavali, 2015; Peterson et al., 2009), but there is significant value to understanding preventative interventions used to support cognitive health among healthy older adults without dementia. Medical anthropological literature demonstrates the importance of recognizing lay perceptions in developing interventions to support health and illness (Kleinman, 1986). A classic example includes Blumhagen (1980) who conducted research on lay beliefs of hypertension among men where a participant referenced family arguments as causing symptoms such as dizziness, bulging veins and blinking lights. Subsequently, Blumhagen (1980) asserts

that lay understandings are pertinent to informing effective interventions and treatments to support health and wellness.

In comparison to urban seniors, rural seniors in North America face critical challenges to cognitive health service utilization related to isolation, geographical distance, inadequate public transportation, financial challenges, and limited health and support services (Hansen, Robinson, Mudge, & Crack, 2005). Forbes and Hawranik (2012) suggest that these challenges often lead to under-utilization of healthcare services and delayed diagnosis of dementia. This paper highlights interventions and activities that rural older adults in Saskatchewan, Canada identified as important to supporting their cognitive health.

5.3) Methods

5.3.1) Participants

A total of 42 rural older adults participated in the study including 28 women and 14 men. This research was conducted over seven months. Five participants were unable to continue throughout the study due to illness and unavailability. The participants' ages ranged from 60 to 87 years. The majority of the participants had resided in the rural communities for most of their lives, and many participants had moved from their neighbouring farms to be closer to the supports and services within the communities.

The participants lived in the rural communities of Young and Watrous, Saskatchewan, Canada located within the Saskatoon Health Region (SHR). SHR is the largest healthcare provider in the province of Saskatchewan and is considered a largely urban health region as many of its services are centralized and located in the province's largest city of Saskatoon (SHR, 2014). Depending on the seasonal road conditions, Saskatoon is located approximately one hour from the village of Young and one hour and twenty minutes from the town of Watrous.

5.3.2) Ethics

This study received ethical approval from the Behavioral Ethics Board at the University of Saskatchewan (Beh14-19). Informed and on-going consent was given by the rural older adults prior to any data collection. The participants were informed that their participation was voluntary and they could withdraw from the study at any time. The participants were advised that they could choose not to answer or discuss any topic or question that may cause them undue discomfort. The participants were assured confidentiality and that no names would be associated with the responses. Moreover, the participants were informed that any comments with identifying information would be edited to ensure anonymity, and that any names of individuals used in the publications would be pseudonyms.

5.3.3) Conceptual framework

A Rural Cognitive Health Framework was developed in collaboration with the participants, and is used for the purposes of this paper to organize the specific interventions that rural seniors identified as impacting their cognitive health (Bacsu, 20XX). The framework identifies four domains of cognitive health that include social, emotional, functional, and intellectual health. Throughout this paper the term ‘intervention’ is used interchangeably with the term ‘activities’. The term 'intervention' is defined as the development of, or any changes to, practices, activities, policies, programs, research, funding, action, or activities (e.g., formal or informal) on the determinants of health to affect the health outcomes of populations (Bacsu et al., 2014).

5.3.4) Data Collection

Data collection was conducted through multiple visits to the rural communities of Watrous and Young, SK from February to September 2014. Guided by an ethnographic and

community-based participatory research approach, primary data collection methods included: participant observation, two waves of semi-structured interviews with the same participants, and field notes.

Participant observation was used in this study to elicit a better understanding of the interventions used by rural seniors to support their cognitive health (Mayan, 2009). DeWalt and DeWalt (1998) suggest that the researcher having an open mind, learning from others, being open to cultural diversity, and having a nonjudgmental attitude, are useful skills for participant observation. Participant observation of rural seniors was conducted over an extended period of time, which allowed for unique access to their everyday lives and culture (DeMunck & Sobo, 1998).

Participant observation was conducted throughout a seven-month timeframe by spending time with five rural older adults to observe daily happenings, conversations, and activities related to their cognitive health (Allan, 2006). The five respondents were selected based on their willingness to volunteer for participant observation. Three of the participants were women and two were men ranging in age from 75 to 83 years. Two of the participants were widowed and three of the participants were currently married. Participant observation consisted of the researcher spending time in the rural older adults' homes, participating in their daily activities, and attending local events. Through participant observation, several activities and functions were attended including birthdays, dances, lunches, walking, bowling, cards, coffee groups, and musical entertainment.

Conducting participant observation over a seven-month timeframe allowed for observation of seasonal changes between the winter-spring and summer-fall months. For example, literature suggests that poor cognitive health among older adults may be aggravated by

the isolating influences of forbidding winter climate conditions and limited day light (Karatay & Akkus, 2011). Accordingly, particular attention was given to observing changes in rural seniors' interventions used to support their cognitive health across the seasons.

A total of 42 older adults (60+) participated in two waves of semi-structured interviews over a seven month timeframe. Five participants were unable to participate in a second interview due to illness or unavailability. The first wave of interviews was conducted in the colder months of February to May, and the second wave was conducted with the same participants in July to September in order to identify any seasonal differences in rural older adults' interventions used to support their cognitive health. The interviews invited open dialogue allowing participants to share ideas and viewpoints throughout the discussions. The interviews took place in the participants' homes and lasted approximately 40-60 minutes.

Field notes were used to detail the research activities and document decisions during the research process. The field notes highlighted day-to-day activities, informal conversations with participants, insights, thoughts, and challenges throughout the research processes. The field notes were recorded in a quiet location after the participant observation and the semi-structured interviews were completed.

5.3.5) Data analysis

Following informed consent, the interviews were audio-recorded and transcribed verbatim. Interview transcripts were returned to participants who reviewed their transcripts to confirm accuracy of the information provided. The interview transcripts and field notes were uploaded into the qualitative software Atlas.ti 7 (Atlas.ti GmbH, Berlin, Germany Version 7) to help organize the data for thematic analysis (Braun & Clarke, 2006). During the coding process, the principal investigator immersed herself within the data by reading and re-reading the various

documents including the field notes, observation notes, and interview transcripts. She then worked to develop a list of codes that were guided by lay theory (Furnham, 1988) and cultural schema theory (Quinn, 2005), and the Determinants of Active Aging Framework (WHO, 2002). For example during the data analysis, the Determinants of Active Aging Framework (WHO, 2002) was used to guide the initial identification of the social determinants of health viewed by rural seniors as impacting their cognitive health such as social support. Cultural schema theory enabled the researcher to identify cultural metaphors used by rural seniors to describe cognitive health. In addition, Bacsu drew on lay theory and the notion of "mental health literacy" to identify information on rural seniors' interventions, preventative strategies, and access to information on cognitive health. Once the coding was completed, data were reviewed to identify emerging themes, patterns, and relationships. Community workshops were held in each of the rural communities to share results and verify whether the study findings accurately reflected the respondents' perspectives.

5.3.6) Rigor

The following three measures from Creswell (2007) and Richardson (2000) were used to ensure rigor throughout the research process. First, prolonged immersion was used by conducting participant observation over seven months and spending time in the rural communities for an extended period of time. More specifically, this study built on a five-year relationship that was established from other ongoing related research in these same rural communities (Jeffery et al., 2011; Bacsu et al., 2014), and involved some of the same participants. The extensive time spent in the rural communities helped to establish trust and substantiate interpretations (Cresswell, 2007). Second, thick description – the process of focusing close attention to contextual detail (e.g., where, when and who) in order to better understand social meanings and actions, was

supported through multiple forms of data collection strategies which included participant observation, semi-structured interviews, and field notes. Third, member checking was employed through participants' review of their interview transcripts to confirm data accuracy. Member checking was also facilitated through community workshops, where the participants exchanged insight and verified the accuracy of the study's findings.

5.4) Findings

Rural seniors identified a range of multidimensional interventions that impacted their cognitive health. These interventions were examined by drawing on the Rural Cognitive Health Framework which was developed in collaboration with the participants of this study, and identifies four domains: intellectual, social, emotional, and functional health (Bacsu et al., 20XX). The intellectual domain was described by rural seniors as the importance of memory and comprehension, while social health was discussed in terms of social interaction and community engagement (Bacsu, et al., 20XX). Participants described emotional health in relation to mental well-being and spirituality, and functional health in regards to one's physical health, activities of daily living, and independence (Bacsu et al., 20XX). While the findings are separated into the four domains for clarity, it is important to note that these domains overlap as do the substantive observations about cognitive health interventions.

5.4.1) Intellectual domain

Rural older adults identified key interventions within the intellectual domain to support their memory and cognitive health including: continuous learning, games, and keeping active.

Continuous Learning

Rural older adults identified continuous learning as an important activity to build and sustain cognitive capacity. Continuous learning was generally described as the on-going

expansion of new information, knowledge, and skills through lifelong learning. Specific examples of educational interventions included learning new bird species, recipes, star constellations, and jokes. One participant would find new jokes from the internet for her spouse and she commented, "He reads the jokes that I print off from online, there are some pretty good ones."

Trying new things outside of one's comfort zone was identified by participants such as joining singing groups and jam sessions at the Seniors' Centre. Trying new activities encouraged participants not only to learn different skills, but also to intermingle with different groups of people. Older adults appreciated travel nights at the library where local residents who visited a destination would share information, videos, and photos of the location. Respondents also felt that reading contributed to their intellectual capacity by providing new knowledge. Many participants enjoyed reading newspapers, magazines, and books on biographies, farming, nature, and history. A rural senior stated, "I read… You can read and you can keep your brain healthy... It depends on what you're reading, I read biographies." Participants would order new books and reading materials from the libraries. Some seniors liked writing as they found that it supported their cognitive health. For example, seniors discussed sending letters to friends and writing essays on different topics such as history to share information with younger generations. However, a few seniors described difficulties with reading from poor vision, limited education, and challenges with writing from hand tremors.

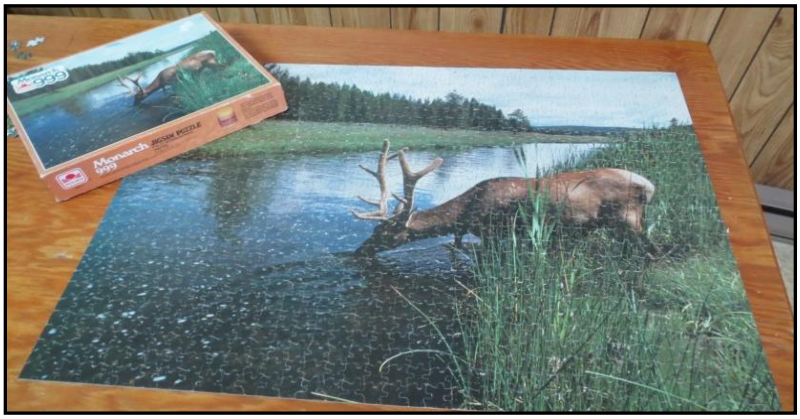
Keeping informed of current events such as the news and weather were identified as a critical intervention to support continuous learning. Older adults would often watch the local, national and global news and discuss it with their family members and friends. A rural senior stated, "I watch the news a lot... I try to keep up with what's happening." Keeping up-to-date on

sports and events such as the Olympics were recognized as important to sustaining conversation and intellectual abilities. An older woman commented, "Taking interest in what's going on in the town or wherever you live and try to stay focused on things that are happening." Participants described the church, hair dresser, and coffee groups as vital locations to keeping informed of current events.

Games

Many rural older adults indicated that card games were vital to supporting their cognitive health such as Kaiser, cribbage, rummy, bridge, and canasta. A senior noted, "I play cards which is good, it makes me think because you have to figure out where the cards go." Some participants played poker with their children and grandchildren as a way to connect with younger generations. Jigsaw puzzles were identified as helping to stimulate the mind in searching for the pieces. Figure 8 provides an example of a nine hundred and ninety-nine piece jigsaw puzzle completed by a participant. A rural older adult commented, "We all know the ways we should keep our brain healthy by using it, by doing puzzles, by thinking and I think that's the only way to keep your brain active, play cards, visit friends."

Figure 8: Jigsaw Puzzle Completed by Participant



Crosswords, word searches, board games, and the puzzle game called "Sudoku" (Sudoku, 2015) were common day-to-day activities for many of the participants. However, many seniors would not engage in games that they found overly challenging. Some seniors would do crosswords but not word searches or Sudoku. For example, one older adult stated, "I do crosswords every day but not Sudoku, I can never get my mind around numbers."

Some of the men enjoyed playing shuffleboard and pool at the Seniors Centre. Some participants watched television game shows and would guess the answers before they were provided such as the quiz show called "Jeopardy" (Jeopardy, 2015). Respondents also discussed playing computer games such as solitaire and Tetris. Many rural older adults questioned whether computer brain games would help to support cognitive health. For example a rural senior stated, "Those brain games, are they any help?"

Keeping Active

Participants identified mental stimulation and keeping mentally active as key to supporting their cognitive health. Rural senior women enjoyed doing hobbies and crafts to stay active including scrap-booking, baking, gardening, painting, sculpting, quilting, needlework, and photography. Figure 9 provides an example of needlework completed by one of the participants for a blanket for their grandchild. One woman commented, "I do scrapbooks, not the fancy ones... I just cut things out of the papers." Another participant stated, "I quilt in the winter, you're thinking about what you're doing and you have to be precise, so yes it does help, I think."

Figure 9: Needlework by Participant

Men discussed hobbies and activities such as wood work, photography, doing puzzles, yard work, and going on drives in the countryside. Respondents highlighted the importance of music such as singing, listening to music, and playing instruments including the piano, guitar, and organ. Many participants found traveling and camping to be intellectually stimulating. Several older adults enjoyed going on drives in the countryside to look at crops, weather conditions, and wildlife. A rural senior stated, "We go for drives… we look at the scenery, we visit our neighbours, and we've got family that live out here on a big farm...We go out there every week." A lack of public transportation was identified by rural seniors as a barrier to traveling and road trips to the city to attend activities such as a gardening tradeshow.

5.4.2) Social domain

Within the social domain, participants recognized multiple interventions to support their cognitive health: technology, community activities, and social interaction.

Technology

Many rural seniors identified technology as key for supporting their communication and cognitive health. Several participants used smart phones and tablets to communicate with their family and friends through various forms of social media. Rural older adults discussed an online social networking service, "Facebook" (Facebook, 2015) as providing an integral medium in

keeping them connected with distant family members, and especially their grandchildren through photos and message updates. Participants stated, "I use Facebook to see what the grand kids are doing…" and "I go on Facebook to see what the family are doing...What pictures they have on there."

Rural seniors who had moved from other rural communities to Young and Watrous identified technology as important to maintaining their connections with friends. For example, an online video and audio-call service, "Skype" (Skype, 2015) was viewed as a relatively inexpensive way to provide direct communication with family members and friends living out-of-province and abroad. One rural senior noted, "I'm on [Skype] because of my grandchildren, they are in other provinces, that's how you get to have a life with some of them..."

Technology also played a vital role in sustaining social interaction for older adults with limited mobility during the cold winter months. Many women participants enjoyed using the online photo sharing website, "Pinterest" (Pinterest, 2015) to share and learn about new ideas such as crafts, hobbies, arts, and recipes. A rural senior woman stated, "I'm on a site, Pinterest which I find very interesting... There are lots of good things that interest me." Respondents enjoyed receiving emails with jokes and video links from their friends and neighbours. Additional forms of social technology used by the participants included blogs, seniors' chat groups, and social networking games.

Limited technical skills were identified as a barrier to using computers and other types of technology. Participants viewed tablets as being more accessible and easier to use than computers. Often the participants' adult children would provide assistance in using computers and other electronic technology. Rural older adults indicated that they would like to have

educational courses to support their usage of technology such as the internet, tablets, and computers.

Community activities

Rural older adults identified participation in community activities as an effective way to supporting cognitive health. Many participants discussed "coffee row" which refers to going for coffee with friends as an important activity that fostered companionship and social connections. Figure 10 provides an example of a group meeting for coffee row. Rural seniors enjoyed attending events such as potlucks, dances, hockey, art shows, and musical entertainment.

Figure 10: Coffee Row

Many rural seniors were involved in activities supported by local groups such as senior centres, church groups, and recreational groups. Local groups provided activities in the community by hosting different events such as Valentine's Day Dances and stew suppers. Several older adults volunteered their time by helping local groups in delivering meals on wheels, and providing baking for birthdays and other special occasions. However, rural older adults noted that a challenge was the volunteer base was aging and in need of younger participants.

Social Interaction

Rural seniors described the importance of social interaction in maintaining cognitive health. Participants highlighted the necessity of friends and family in providing social support and interaction. Newcomers to the communities often found it challenging to meet new people and interact with others. Many participants felt a welcome wagon was needed to help newcomers integrate within the rural communities. A rural senior stated, "For newcomers, it is hard to break in, I remember hearing Saskatchewan is very friendly, but, we are groupie too... We don't have a welcome wagon here." Participants noted that the seniors' centre and bowling alley were good places to meet new people. However, the stairs and lack of an elevator at the bowling alley were identified as a barrier for seniors with mobility challenges.

Participants expressed concerns that caregivers or disabled seniors living in their own homes may not receive adequate opportunities for social engagement. Participants felt that more seniors' housing and condominiums with social gathering spaces were needed to promote interaction, especially during the winter months. Rural seniors also discussed the need for a visiting program or check-in service as they felt that meals on wheels and home care did not provide sufficient interaction.

5.4.3) Emotional domain

Interventions that emerged in the emotional domain were related to three main areas: spirituality, life transitions, and stress relief.

Spirituality

Spirituality was identified as being an integral activity to supporting cognitive health. In discussing interventions of spirituality, several rural older adults highlighted the importance of practicing religion, reading scripture, and attending church. One respondent stated, "I do

meditation every morning and Bible reading for about an hour, and I memorize a lot of the Psalms… It certainly gives me a good start to the day." While many participants noted the importance of religion, spirituality was generally expressed in broader forms. Spiritual interventions were practiced in many ways including tai chi, yoga, gardening, meditation, music, prayer, devotional rituals, cemetery visits, and events such as funerals.

Spirituality was often identified in dealing with personal or family illness, grief, and death. Many respondents discussed communicating with their deceased spouses and family members. Some participants described feeling a connection or presence of family members or loved ones who had passed on. Participants described reading books on spirituality and religion in discussing concerns of illness and loss of loved ones.

Gardening and spending time in nature was highlighted by participants as a spiritual activity. A senior woman noted, "My garden is my church, I have my conferences with God when I'm with my plants, it's relaxing… You start pulling weeds and you don't have to think about things…a lot of stress relief I get from it." Figure 11 displays a participant's flower garden in their yard. Many participants expressed that gardening and nature were good for the body, soul, and mind.

Figure 11: Flower Garden

Life Transitions

Participants identified difficult life transitions and stressful events as barriers to emotional health. Difficult life transitions addressed by rural older adults included retirement, loss of mobility (e.g., walking and driving), health issues, care giving, death of a spouse or friend, downsizing, moving homes, relocation of communities, and loss of independence. Participants described emotional challenges of losing their physical independence with age and feeling a loss of purpose. A rural senior man stated, "I wanted to dig a couple of drainage trenches away from the house but I can't do that anymore... It ticks me off to have to be so dependent on somebody." Additionally, respondents found moving homes and downsizing into smaller housing units to be emotionally difficult. A rural senior describing downsizing with their partner commented, "Well we can't agree on what to dispose of, I would like to back the truck up out of here, get rid of a lot of stuff."

Respondents commented that their spouses' health and care giving impacted their own well-being. Many participants shared personal stories of their close friends and family experiencing severe dementia due to the stress of a death of a spouse. Some rural older adults expressed anxiety and challenges in relation to spouses being separated from each other into care homes outside of the community. For example, having a loved one sent away to a long-term care home outside of the community was described as being emotionally challenging and stressful.

Rural older adults expressed financial challenges in relation to travel for medical care, prescriptions, and seniors' housing. A participant stated, "When you are on pension, there is no money for extras and costs go up, up, up with your medication and with your trips to the doctor, surgeries and whatever else, cost keeps going up... ." Many seniors identified challenges related to limited pensions and not having money available to cover medication costs and travel for

healthcare in the cities. For example, a senior stated, "Travelling from a small rural setting it's always cash up front... You've got to decide, are we going to get a health issue fixed or are we going to travel to see our kids?" Participants thought a subsidy should be available to help cover rural travel costs to medical appointments located in urban centres.

Stress Relief

Respondents identified stress as a negative factor for cognitive health and discussed important stress management interventions. Specific examples of interventions used to support stress management included listening to music, walking, reading, meditation, journaling, support groups, and art. For example, artistic outlets such as painting, music, woodwork, soapstone carving, and writing were identified as activities to support relaxation, pleasure, and enjoyment. A rural older adult noted, "I think the arts is something that can really keep a person alive."

Spending time in nature was highlighted as an important way to reduce stress. Rural older adults identified star gazing, bon fires, and watching wildlife as relaxing activities. A participant noted, "At night you don't have far to go to see the stars, you can see them in the back yard, it's not that many lights." A senior man stated, "It's a slower pace of life, it's cleaner air… You can sit out at night around the fire and just think."

Participants emphasized the significance of physical activity and exercise as key interventions to support stress relief. For example, walking outdoors and cycling in one's home were described as relieving stress and clearing the mind. A senior man stated, "For me to jump on an exercise bike peddle for an hour, it's a more relaxing than anything; it doesn't challenge my mind but it gives you time, when you are by yourself you can do your own thing."

Rural older adults used support groups to provide relief from stress. Support groups were described in various forms from having coffee with friends to more formal health related support

groups. These formal and informal groups often helped to relieve stress by providing compassion, information, and an understanding environment. Participants also discussed the usage of journals and diaries to help cope with stressful situations and express their thoughts during difficult times.

5.4.4) Functional domain

In discussing functional health, participants acknowledged a range of interventions to support their cognitive health including: sleep and nutrition, vision and hearing, physical activity, and home supports.

Sleep and nutrition

In discussing interventions that supported day-to-day functioning and cognitive health, many rural seniors identified the significance of sleep and nutrition. For instance, one senior stated, "I think rest is a good thing, healthy food and mental stimulation, that's the important things." Another participant noted, "I think you should eat healthy, certainly and rest." Some respondents discussed taking dietary supplements but were not sure which one's supported cognitive health and indicated that they would like more information. Many expressed uncertainty and confusion about nutritious foods and dietary supplements in relation to supporting cognitive health. Participants felt that conflicting and changing information contributed to their uncertainty about the role of nutrition in supporting cognitive health. Subsequently, rural seniors often poised questions about healthy foods and dietary supplements to support cognitive functioning.

Many participants discussed difficulties sleeping at night because of stress, pain, having too many things on their mind, concerns about missing appointments, daytime naps, and limited daily activities. For example, an older adult commented, "sleep seems to be a problem and a lot

of us have trouble sleeping." Participants identified a range of activities that they used to help them sleep including reading books, watching television, writing in journals, and waking up early in the morning.

Vision and hearing

Respondents indicated that vision and hearing were central to supporting older adults' cognitive health in their ability to comprehend and communicate. A participant stated, "My mom had a hearing problem that was a barrier, because she wasn't communicating... didn't have that social interaction." Interventions to support vision included regular eye check-ups, prescription updates, wearing sunglasses and eye surgery. Actions to improve hearing included hearing aids, and asking people to speak up and speak slowly.

Physical Activity

Rural older adults identified physical activity as critical to supporting their cognitive health. Rural seniors participated in walking, golf, bowling, curling, swimming, and dancing. Many rural older adults also enjoyed "Pickle-ball" which is a game that is played with a ball and described as being a combination between badminton and tennis (Pickle-ball, 2015). Interventions such as sticks with handles were used in curling and bowling for seniors who had limited mobility, back pain and difficulty bending down (refer to Figure 12). Some participants had treadmills, exercise bicycles or ellipticals for exercise within their homes. Rural seniors described walking with their peers for safety and social interaction. However, losing exercise companions such as friends or dogs were identified as barriers to physical activity. During the winter, many older adults participated in indoor walking programs offered at the town halls, school gyms, and local recreational facilities. A few older adults used health apps on their cell phones to track their progress while walking.

Figure 12: Bowling with a Stick

Home Supports

Rural older adults often relied on interventions within their homes to help them in their day-to-day activities and provide reminders of appointments and events. For example, household interventions included calendars, note pads, eraser boards, tack boards, sticky notes, shopping lists, address books, watches, and phone lists. Home reminders such as calendars or lists were often displayed in the kitchen on fridges, near telephones, and on kitchen tables. Many participants used bubble packs or pill organizers to manage their medication. In addition, some participants used smart phone calendars and alarms to keep track of appointments and medication.

5.5) Limitations

In this study, a single coder conducted the thematic analysis. It has been argued that inter-rater coding is superior to a single coder, as an individual may not code reliably and may be susceptible to bias without inter-coder agreement and congruence (Cook, 2012). However, others assert that if the study has open-ended interview questions and the researcher has conducted the interviews themselves that inter-rater reliability will likely limit the data analysis to focus on

obvious descriptions rather than more in-depth, profound and insightful findings (Morse, 2012). More specifically, the interview text will have more value to the researcher who conducted the interviews and was immersed within the data (Morse & Richards, 2002), and appreciates its contextual meaning rather than a second coder who merely reads the text at face value (Morse, 2012).

A substantive limitation is that participants in this study were all fairly mobile and active. These sample characteristics tend to be relatively common in other studies with older adults (Bethancourt, Rosenberg, Beatty, & Arterburn, 2014), but may limit the study's generalizability. Although efforts were made to be inclusive of diverse rural older adults, this sample may not be representative of seniors with physical mobility challenges or limited transportation options.

5.6) Discussion

This paper sheds light on rural older adults' perceptions of key interventions impacting their cognitive health. Griner and Smith (2006) assert that interventions are more likely to be effective when they are compatible with the local context and culture. In this study, rural seniors contributed experiential knowledge, local insight, and expertise in relation to identifying their views on critical supports and challenges affecting their cognitive health.

In contrast to the current literature which understands cognitive health primarily in terms of pathology and biomedical treatment of dementia (Hogan, Bailey, & Bailey, 2008; Kumar & Ekavali, 2015; Peterson et al., 2009), rural seniors described cognitive health interventions within a more holistic context. These interventions were examined using the Rural Cognitive Health Framework's (Bacsu, 20XX) four domains of intellectual, social, emotional, and functional health. Guided by rural older adults' perspectives, this paper has vital implications for

community leaders and policy makers in identifying relevant interventions to support cognitive health in rural communities.

In the intellectual domain, rural older adults identified the importance of continuous learning, keeping mentally active, and playing games. Similar to recent literature which suggests that learning a new skill helps to facilitate cognitive health (Park et al., 2014), rural seniors in this study felt that acquiring new knowledge, and keeping mentally active helped to support their memory and cognition. However, a challenge to cognitive health was that rural seniors often did not engage in activities that they found overly difficult. For instance, some seniors enjoyed playing games such as crosswords but would not partake in Sudoku as it was too difficult. Existing research indicates that challenging the mind is important to supporting cognitive function as it strengthens connections between different parts of the brain (Reichman, Fiocco, & Rose, 2010).

In the social domain, participants identified a range of interventions in the areas of technology, community activities, and social interaction. Rural older adults viewed technology and social media as critical to supporting their communication with family and friends. Similarly, participants felt that community activities played a vital role in sustaining their social interaction and cognitive health including pot lucks, dances, art shows, and musical entertainment. Challenges to social interaction included a lack of seniors' housing with social spaces, care giving responsibilities, limited activities for social engagement, and being a newcomer to the community.

Cognitive health interventions in the emotional domain consisted of three main areas including spirituality, life transitions, and stress relief. In addressing spirituality, rural seniors' identified interventions including tai chi, yoga, gardening, meditation, church, music, prayer,

devotional rituals, and cemetery visits. Consistent with existing research that indicates that stress may accelerate poor cognitive health (Marin et al., 2011), participants in this study felt that stress negatively impacted their cognitive health. For example, rural seniors asserted that difficult life transitions created stress that was detrimental to their cognitive health. Subsequently, participants discussed several interventions used to support stress relief such as journaling, having a positive attitude, and support groups.

The functional domain of cognitive health interventions included sleep, nutrition, physical health, and home supports. Similar to recent literature (Gildner et al., 2014), older adults in this study identified sleep as necessary to supporting their cognitive performance. In order to support a good night's sleep, rural seniors highlighted the importance of waking-up early, reading, and journaling. Nutritional interventions included taking vitamin supplements and eating healthy. However, many older adults felt that they lacked information on key foods and vitamins to support cognitive health. Interventions to support physical health such as vision, hearing, and physical mobility, included regular eye exams, hearing aids, and physical activity. Home-based interventions played a vital role in supporting cognitive health such as pill organizers, calendars, and key holders.

This study discussed a range of interventions that rural seniors described as supporting their cognitive health. While some of the interventions such as more seniors' housing were complex, many of the interventions were relatively inexpensive and moderately simple to implement at the community-level. Consistent with the participants' viewpoints, a growing body of data suggests that the simple act of exercise among older adults can have beneficial consequences in supporting cognitive health (Hamer & Chida, 2009). Subsequently, this study's

findings have important implications in helping to support the development of preventative programs and interventions to support rural older adults' cognitive health.

Based on the perceptions of rural older adults, the findings from this study suggest that a holistic approach encompassing multidimensional interventions may help to support cognitive health among rural seniors. In moving forward, additional research is necessary to monitor and evaluate the impact of these interventions on supporting rural older adults' cognitive health. For example, little is known about how or whether these interventions improve or maintain rural older adults' cognitive performance. Subsequently, further research also needs to examine how individual and community-level characteristics impact the responsiveness to these specific cognitive health interventions (Hosking, Sargent-Cox, & Anstey, 2015). However, measurement and evaluation of cognitive health interventions is currently in its infancy (Institute of Medicine, 2015). Reiginders and colleagues note that "the issue whether the effects of cognitive interventions generalize to improvement in everyday life activities is still unresolved and needs to be addressed more explicitly in future research" (Reiginders, van Heugten, & Boxtel, 2013, p. 263). Longitudinal studies may be especially useful for evaluating the influence of these interventions on older adults' cognitive health over time. Increasing our knowledge of effective methods to identify, measure, and evaluate the impact of cognitive health interventions may arguably represent one of the most pressing issues currently facing the field.

Understanding rural older adults' perspectives of cognitive health interventions provides useful information to inform cognitive health promotion and preventative activities within a rural context. In order to support cognitive health in rural communities, rural older adults' input and collaboration is vital. Given the aging demographic in many rural communities, this study's

findings have important implications for policy-makers, health professionals, and community leaders.

5.7) Conclusion

This paper identified key interventions that healthy rural older adults highlighted as important to supporting their cognitive health. More specifically, rural older adults addressed a variety of opportunities and challenges to maintaining their cognitive health within a rural context. Building on the Rural Cognitive Health Framework (Bacsu 20XX), rural seniors discussed critical interventions in relation to the framework's four domains of social, emotional, functional, and intellectual health.

By working in collaboration with rural older adults, this study's findings provide pertinent information to promote cognitive health in rural areas. For example, the participants contributed local insight, cultural understanding, and experiential knowledge in relation to supporting rural seniors' cognitive health. Examining rural seniors' viewpoints of cognitive health interventions is critical as it provides essential information to inform preventative strategies and awareness in rural communities. As policy makers, community leaders, and health professionals work to address the needs of the rural aging demographic, it is imperative to examine preventative programs and interventions to support rural seniors' cognitive health.

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CHAPTER 6

CONCLUSION

6.1) Introduction

Understanding rural older adults' perceptions of cognitive health is essential to support the development of programs and strategies aimed at dementia awareness, education, and prevention in rural communities. Existing literature indicates that cognitive health is intimately linked to one's culture (Wu, Goins, Laditka, Ignatenko, & Goedereis, 2009). Social, cultural, and environmental context has an important role in determining the ways in which health and illness are perceived and interpreted among rural older adults (Averill, 2012). As a group with specific needs, studies indicate that rural seniors experience unique barriers in accessing cognitive care, including geographic distance, limited services, and gaps in health professionals' knowledge about dementia and existing supports (Hansen, Robinson, Mudge, & Crack, 2005).

There have been major advances in the literature on dementia and Alzheimer's disease in rural communities. Recent literature suggests that the brain is able to adapt and grow new neurons in old age (McDougall, 2009), which highlights the importance of prevention and the possibility of non-biomedical interventions in supporting older adults' cognitive health (Williams & Kemper, 2010). However, existing studies have focused primarily on dementia and Alzheimer's disease rather than understanding perceptions toward cognitive health more generally (Anderson, Day, Beard, Reed, & Wu, 2009). Mitchell and colleagues (2012) assert that over the past 25 years, research has focused predominantly on examining the experiences of people with dementia (Mitchell et al., 2012). More specifically, extensive research has been conducted on understanding the perspectives of healthcare providers (Connell, Kole, Avey, Benedict, & Gilman,1996; Hanson, Hughes, Routley, & Robinson, 2008; Meuser, Boise, &

Morris, 2004), rural older adults with dementia (Beard, Fetterman, Wu, & Bryant, 2009; Blackstock, Innes, Cox, Smith, & Mason, 2006; Forbes, Morgan, & Janzen, 2006), and family caregivers (Morgan, Semchuk, Stewart, & D'Arcy, 2002; Smale & Dupuis, 2004).

The prevalence of dementia is anticipated to rise given the aging demographic in many rural communities in Canada and beyond (Statistics Canada, 2011). With the exception of a study by Wu and colleagues (Wu, Goins, Laditka, Ignatenko, & Goedereis, 2009), there is a paucity of research on the perceptions of cognitive health among healthy older adults without dementia in rural communities. A growing body of literature sheds light on the need to develop a more comprehensive understanding of cognitive health perceptions among different cultural groups (Anderson, Day, Beard, Reed, & Wu, 2009; Dilworth-Anderson & Gibson, 2002). A recent literature review (Innes, Morgan, & Kostineauk, 2011) suggested that a better understanding of rural perceptions of cognitive health is required with a specific focus on understanding the influence of culture within rural and remote communities. Dilworth-Anderson and colleagues (2012) assert that by exploring a cultural group's beliefs and practices, policy makers can be better prepared to identify the cultural factors that challenge and facilitate addressing disparities in cognitive health.

The objectives of this study were two-fold: 1) to examine healthy older adults' perceptions of cognitive health within the context of rural Saskatchewan, Canada; and 2) to identify how rural seniors without dementia maintain and support their cognitive health. Chapters written as three journal manuscripts in this thesis reflected these objectives in the following manner: Chapter 3 discussed the methodological lessons learned from this study in conducting engaged scholarship with rural older adults; Chapter 4 examined rural seniors' perceptions of cognitive health and worked toward the development of the Rural Cognitive

Health Framework; and Chapter 5 built on the Rural Cognitive Health Framework by identifying interventions used by rural older adults' to support their cognitive health in relation to the framework's four domains of social, emotional, functional, and intellectual health.

This chapter reflects on the study's key findings by proposing four interdependent, themes to support rural older adults' cognitive health. First, there is a need to move beyond biomedical interventions to interventions informed by lived experience and a social determinants approach. Second, lay perspectives and contextual sensitivity are essential to understanding rural older adults' cognitive health. Third, partnerships and collaboration with rural older adults is vital to supporting rural seniors' cognitive health. Fourth, ethnographic research is a useful means to elicit in-depth understandings of cognitive health. Throughout each of the themes, the strengths, limitations, and further research areas are discussed.

6.2) Key themes, limitations, strengths, and further research areas

6.2.1) *Interventions informed by lived experience and a social determinants perspective*

There is an increasing need for knowledge on preventative interventions to support and sustain cognitive health among older adults without dementia. Unless more effective strategies are developed to prevent dementia, the prevalence may increase and triple to as high as 13.8 million people by the year 2050 (Hebert et al., 2013). The Alzheimer's Association and Centres for Disease Control (2013) anticipate that a new research focus needs to address older adults living without dementia but who still face the risk for poor cognitive health in later years. The Alzheimer's Association and Centres for Disease Control (2013) assert that among the primary research questions still outstanding is determining the impact of behavioral and lifestyle interventions have on dementia prevention and supporting cognitive health.

In the cognitive health literature the vast majority of interventions have focused on addressing the pathology and biomedical treatment of Alzheimer's disease and other types of dementias, rather than prevention. For example, extensive research has been conducted to examine the epidemiology, clinical characterization, pathology, and assessment of different types of dementia among older adults (Hogan, Bailey, & Bailey, 2008; Kumar & Ekavali, 2015). Epidemiological research has documented biomedical risk factors for developing dementia including cardiovascular health, head injury, age, family history, genotype, and other comorbid mental and non-mental diseases (Yen, et al., 2010). In a recent literature review, Petersen and colleagues (2009) note that research on the early clinical characteristics of dementia has become a primary focus of epidemiological, neuropathological, biomarker, disease mechanism, and clinical trial research.

Currently, there is limited knowledge on preventative interventions used to support and sustain cognitive health among healthy older adults without dementia. However, recent literature is beginning to address the concepts of neuroplasticity and neurogenesis (Williams & Kemper, 2010; Smith, 2013). Neuroplasticity suggests that the brain is able to adapt and grow while neurogenesis implies that the brain has the ability to develop new neurons to support cognitive function even in old age (McDougall, 2009).

This research on neuroplasticity and neurogenesis highlights the need for innovative population health intervention research to develop interventions that support older adults' cognitive health (Reichman, Fiocco, & Rose, 2010). Population health intervention research refers to research that produces knowledge on interventions that address underlying issues of health, social, economic, and environmental factors to improve health outcomes at the population level (Frankish, 2012; Hawe & Potvin, 2009). This study frames 'intervention' as the

development of, or any changes to, practices, policies, programs, research, funding, action, or activities (e.g., both formal or informal) on the determinants of health to affect the health outcomes of populations (Bacsu et al., 2014).

Why must cognitive health interventions be culturally appropriate? Existing research addresses the importance of culture on health (Brown et al., 2009). Culture influences a group's understandings of health and illness, symptoms, etiology, and treatments (Bode, 2011). Kleinman (1977) notes that, "Culture does considerably more than shape illness as an experience; it shapes the very way we conceive of illness" (Kleinman, 1977, p.4). Culture is a critical determinant of health, it can hinder or support health interventions, predict specific health behaviours, and explain complex differences in population health outcomes (Hruschka, 2009). Goins and colleagues (2011) suggest that the surrounding rural culture plays an important role in health perceptions among older adults. For example, the authors found that rural seniors with limited services and geographic remoteness tended to emphasize the importance of functional ability in describing their health due to a greater reliance and need for self-sufficiency by growing a garden for fresh vegetables or chopping wood. Similarly, this study's participants tended to discuss the importance of functional health in describing their cognitive health.

A number of studies indicate that cognitive health interventions are more effective when they are congruent with the local culture (Anderson et al., 2009; Ladikta et al., 2009; Williams & Kemper, 2010). The medical anthropological literature affirms the importance of including culture (Brown et al., 2009), lived experiences, and lay perspectives in the development of health interventions (Blumhagen, 1980; Kleinman, 1986). Subsequently, rural seniors' input and perceptions are critical to identifying relevant interventions to address the local needs and realities to support cognitive health in rural communities.

This study examined interventions used by rural older adults to support their cognitive health and identified a number of informal strategies outside a typical biomedical approach to cognitive health. More specifically, rather than define cognitive health in terms of pathology and dementia, rural older adults provided a more holistic and multidimensional conceptualization of cognitive health, spanning domains of intellectual, social, functional, and emotional health. Although the interventions for each of the domains were discussed separately for clarity, the participants emphasized the interconnectedness and holism among the interventions. For example, rural older adults described informal, day-to-day activities such as gardening as an intervention that supported what they saw as the emotional, functional, and intellectual domains of their overall cognitive well-being. For many of the participants, gardening provided stress relief, nutrition, and physical activity. Gardening was often described as a way of life; it supported self-sufficiency with limited access to services in the rural communities. New studies suggest that gardening may be an effective therapeutic intervention for supporting older adults' cognitive health. A literature review by Detweiler and colleagues (2012) found that gardening among older adults reduced pain, increased attention span, lessened stress and agitation, lowered medication usage and anti-psychotics, and reduced the number of falls. Similarly, Rahe and colleagues (2015) found that multidimensional interventions were more effective than interventions focused on only one domain in supporting older adults' cognitive health. Thus, rural seniors' input and perceptions could provide vital information to develop culturally relevant cognitive health interventions into an otherwise biomedical treatment model.

Although rural older adults identified a wide variety of interventions used to support their cognitive health, there were important challenges in translating their knowledge into action. Many rural seniors identified issues of conflicting messages in the media and gaps in knowledge

on effective interventions to support cognitive health. For example, participants identified the importance of nutritious foods to support cognitive health but had heard differing information about what constituted nutritious; some discussed hearing information about dark chocolate while another discussed scepticism after hearing about the benefits of bacon on a popular daytime television health talk show. Rural older adults described that they would like more information and knowledge of nutritious foods and vitamin supplements to facilitate cognitive health. These knowledge gaps have important implications as they support the need for increased research and information on best practices to facilitate cognitive health in rural communities. For example, the advent of brain health educational programs in urban communities need to be expanded and adapted to rural areas to provide culturally relevant knowledge (Griner & Smith, 2006) on various topics such as diet, physical activity, social engagement, intellectual stimulation, and other activities to support cognition (Williams & Kemper, 2010).

Many of the interventions discussed by rural seniors require a multifaceted approach targeted across different sectors and levels of influence to support rural cognitive health. For example, rural seniors' discussed the need for supports beyond the traditional healthcare sector to consist of factors at various levels including: individual level factors such as gardening and continuous learning; community-level factors such as local activities and social support; and policy-level factors such as public transportation and seniors' housing. Application of an ecological systems perspective may be useful in understanding rural seniors' cognitive health as it recognizes that a population's health is influenced by various factors interacting across multiple levels. For example, this means there is an emphasis on understanding interactions across multiple levels, including older adults and the microsystem (e.g., family), mesosystem (e.g., healthcare), exosystem (e.g., economic policies), macrosystem (e.g., overarching beliefs

and values), and chronosystem (e.g., life transitions over the life course) (Bronfenbrenner, 1979). Cantor's Social Care framework (Cantor, 1989) is consistent with an ecological framework as described above and it has been found to be useful in supporting research on rural aging (Bacsu et al., 2014). For example in moving forward with future research on rural cognitive health, Cantor's framework would help to support the identification, implementation, and evaluation of cognitive health interventions occurring at four different levels including the individual, kin, community, and policy levels. Further research needs to examine the potential for an ecological perspective in informing rural cognitive health intervention research.

In supporting older adults' cognitive health, it is pertinent to have an increased focus on preventative interventions informed by the social determinants of health (Public Health Agency of Canada, 2011). The social determinants of health are the conditions in which individuals are born, live, work and age, and the broader factors influencing daily life (Halfon, Larson, & Russ, 2010). Cognitive health may be influenced by numerous determinants (e.g., employment, social networks and environment, at multiple levels (e.g., individual, kin, community and policy) and yet we continue to focus on the treatment of dementia (Mitchell et al, 2012). Similar to physical health (Marmot, 2005), the application of a social determinants perspective (PHAC, 2011) may offer substantial insight for supporting cognitive health. Within this context, interventions would move beyond the traditional biomedical scope to address the influence of factors ranging from financial to socio-political determinants. In order to fully comprehend the potential influence of these interventions, additional research is necessary to identify what constitutes the underlying determinants of diverse older adults' cognitive health. In addition, this research needs to be inclusive of all older adults, including those who live in rural and remote communities. Rural older adults are a heterogeneous population with a range of backgrounds and preferences (Evans,

Jones, & Smithson, 2014). For example, rural older adults and their communities are diverse in relation to socio-economics, geography, culture, demographics, resources, and social support (Lavergne & Kephart, 2012). Therefore, a potential limitation and challenge for future research is to develop a comprehensive understanding of important cognitive health determinants among diverse rural older adults.

In moving forward with future research, it is important to increase the scope of current cognitive health research to the development, implementation, and evaluation of preventative interventions informed by lived experience and the social determinants of health perspective that have not been included in traditional biomedical research. More specifically, two main areas require further research. First, it is critical that research begins to assess and evaluate the cognitive health effects of rural older adults' interventions used to support their cognitive health such as gardening and social interaction. Second, there is a need for the development, implementation, and evaluation of cognitive health programs within a rural context.

6.2.2) Importance of lay perspectives and contextual sensitivity

There is a growing movement for increased public involvement and patient-centered care which engages older adults and other members of the public in health and social care policy and planning (Evans, Jones, & Smithson, 2013). Public involvement is broadly defined as the conduct of policy, planning and research carried out *with* members of the public rather than *for* them (Age UK, 2010). In recent literature, the phrase "public involvement" is used interchangeably with patient involvement, patient-centered care and user involvement (Brett et al., 2014). Public involvement in policy is not a new concept; for example, political science literature has addressed the role of public involvement through the terminology of civic engagement, citizen engagement, and related terms of deliberative democracy (Cook 2000;

Habermas, 1994, 2006). The notion of public involvement suggests that health and social care can be improved by redefining the passive role of the patient to a more active and involved role (Evans, Jones, & Smithson, 2013).

The increasing role for public involvement reflects the desire for greater accountability for quality care and more relevant services to address the changing needs and priorities of the population (Ross et al., 2005). In the United Kingdom, increasing public involvement generally termed "user involvement" has led to a focus on improving patient-centered care, advocacy, and public input into health planning and evaluation (Evans, Jones, & Smithson, 2013). For example in England, the National Health Service (NHS) recently released the report entitled, *Transforming participation in health and care: 'The NHS belongs to us all'* which emphasizes the rights of service users and the public to be involved in all aspects of health planning and service provision (NHS, 2013). In Canada, this is reflected in the national Strategy for Patient-Oriented Research (SPOR) initiative launched by the Canadian Institutes of Health Research, the major health research funder in Canada (CIHR, 2014). In Saskatchewan, this policy movement is reflected in the *Patient First Review* that was developed with the public's involvement of approximately 4,000 Saskatchewan residents including families, patients, older adults, health practitioners, and policy-makers (Dagnone, 2009).

Given the aging rural population, this shift toward public involvement will have an increased focus on older adults' input into research, policy and evaluation (Fudge, Wolfe, & McKevitt, 2007). Strengths of involvement with older adults include experiential knowledge, local expertise, empowerment, and the potential for improved interventions and service quality with more relevance to older adults (Walker, 2007). However, there are important challenges and limitations to older adult involvement such as poor health, disability, language barriers, limited

time and resources (Fudge, Wolfe, & McKevitt, 2007), ageism, and lack of confidence (Goll, Charlesworth, Scior, & Stott, 2015). Existing literature suggests that a far greater challenge is the absence of initiatives with diverse older adults, particularly in rural and remote communities (O'Shea, Walsh, & Scharf, 2012). For example, Giarchi (2006) notes that there has been a strong focus on urban deprivation and social policy issues which has resulted in rural issues being overlooked. Windle and Porter (2008) assert that in order to improve older adult involvement and representation, it is essential to identify novel approaches and theories that facilitate diverse perspectives of vulnerable populations such as rural older adults. More specifically, there is a need for knowledge and guidance on how to implement engagement with older adults (Age UK, 2010).

With the growing prevalence of dementia (Statistics Canada, 2011), this movement toward patient centered care challenges health practitioners and decision-makers to understand how older adults define and support their cognitive health. The notion of public involvement provides a basis for supporting older adults' input into policy and planning. However, Kalache, Barreto and Keller (2005) assert that policy proposals that support user involvement are of little use unless they include identifiable theories and actions to support public involvement.

Guided by lay theory and cultural schema theory, this study has significant implications for researchers and decision-makers working to develop genuine opportunities to understand lay perspectives among older adults. Lay theory recognizes the importance of local insight and experiential knowledge (Bergstrom, Holmes, & Pecchioni, 2000) while cultural schema theory sheds light on the significance of shared experiences, contextual sensitivity and unspoken meanings (Strauss, 2005). Using contextual sensitivity and lay perspectives will allow decision-makers to develop more effective policies and programs to support cognitive health.

It is well documented that lay theories of health and illness are developed on the basis of one's surroundings and culture (Blumhagen, 1980; Kleinman, 1986).) Trostle (2005, p.5) notes that the notion of "cultural epidemiology" should receive far greater attention as culture has significant explanatory value in understanding disease classification, definitions, risks, management and behaviours. Goins and colleagues (2011) assert that through lived experiences and commonality among group members, lay perspectives and health definitions combine to create a unique health culture. For example, existing literature suggests that the conceptualization of health is an interdependent process where lay knowledge, living conditions, and lived experiences are placed into existing cultural schemas (Levesque & Li, 2014; Nishida, 1999). Cultural schemas are belief systems based on shared knowledge and ways of thinking that are developed through experiences rooted in culture (Nishida, 1999). These cultural schemas inform illness labeling, identification of symptoms, susceptibility explanations, and treatment options (Furnham, 1988). This interdependent process between lay perceptions and contextual experiences (Goins, Spencer, & Williams, 2011) is why it is important for policy-makers to develop culturally appropriate strategies to support rural older adults' cognitive health.

6.2.3) Need for older adult partnerships and collaboration

In Saskatchewan, rural communities and the older adults within them are diverse (Kumaran & Salt, 2010). Rural communities and people differ by geography, religion, culture, language, climate, socio-economic status, and industry. For example, rural communities in Saskatchewan range from small, Francophone speaking, agricultural-based communities in the northeast, to English speaking, oil and gas-based economies in the southeastern part of the province. It is important not to generalize about rural seniors as being a homogeneous group as this can promote stereotypes. However, there are common themes associated with rural culture in North

America relating to values of independence, hardiness, and self-reliance (Averill, 2012; Gessert et al., 2015; Goins et al., 2011). Limited access to services combined with manual labour and land-based employment such as agriculture and mining are thought to have contributed to these values (Bushy, 2009). In addition, a dispersed and low population density, often limits the services available to rural residents. For example, rural older adults in Watrous and Young have limited public transportation, seniors' housing, long-term care, and health and support services. Independence, hardiness, and self-reliance are often important values when living with limited access to health and support services. Despite these rural values identified in the literature, it is important to use caution in making inferences and generalizations about rural communities. Rural communities are unique and as such, this study suggests that local partnerships and collaboration are essential to addressing the specific values, needs, and challenges of the rural older adults. They can offer invaluable insight in developing interventions to support cognitive health to address the unique context and culture of each rural community. Incorporating local seniors' viewpoints on cognitive health supports the development of community-relevant and culturally informed strategies to support dementia awareness, education, and prevention in rural communities. In addition, Popay asserts that health research needs to be more democratic through collaboration with "the groups who are the target of the research and whose voices are rarely if ever heard" (Popay, 2012, p.60). Existing policies have often employed an urban-focused, one size fits all perspective (Kirby & LeBreton, 2002), but neglecting the cognitive health needs of rural older adults leaves many without critical supports and services.

A key implication of this study is that policy makers, health professionals, researchers, and community leaders should collaborate and partner with rural older adults to facilitate significant advancement towards improving cognitive health in rural communities. However, this suggestion

is of little relevance unless it includes identifiable actions to guide the partnerships. For example, partnerships are often complicated with issues related to balancing powers between the community and researchers (Minkler, 2005). Researchers must be willing to share control and have a mutual interest in both research and societal action (Baffour, 2011). These types of partnerships benefit greatly from using an overarching collaborative approach with guiding principles to help navigate the process of partnerships (Wallerstein & Duran, 2003).

In supporting collaboration with rural older adults, this study used community-based participatory research (CBPR). Community-based participatory research provides a valuable approach to help facilitate and sustain local partnerships. A notable benefit of CBPR is that both researchers and participants provide their expertise to support shared knowledge and capacity building at the community level (Israel, Eng, Schultz, & Parker, 2005). Community-based participatory research supports collaboration through all stages of the research including identification of the problem, establishing the research questions, developing the methods, data interpretations, and developing strategies to support knowledge translation (Israel et al., 1998). In conducting CBPR, a memorandum of agreement (MOA) is important for outlining study objectives, methods, roles, responsibilities, and deliverables to avoid unnecessary confusion and tension. Specific challenges in CBPR may include negotiating priorities (Baum, MacDougall, & Smith, 2006), having diverse ideas and expectations (Lawless, 2000), supporting mutual capacity building (Ball & Jaynst, 2008), incorporating democratic participation (Banks et al., 2013), and addressing issues of power difference (Nugus, Greenfield, Travaglia, & Brauthwaite, 2012).

In conducting this study, a major challenge was the need to balance the community's expectations with the study's deliverables. It was necessary to continually highlight that while it was possible to inform policy-makers of the study's findings this did not ensure any form of

policy change. This study found that an MOA is helpful in balancing the expectations of the community partners by outlining the specific deliverables and outcomes of the research at the onset of the study.

It is worthwhile to note that in Canada the Tri-Council Policy Statement (TCPS) 2, Chapter 9 provides well developed guidelines for collaboration which are adaptable outside of Indigenous health research (Tri-Council of Canada, 2014). For instance, this policy provides guidance on ethical and respectful relationships for collaboration between researchers and Indigenous peoples; it highlights the need to respect community's culture, customs, traditions, and codes of practice (Tri-Council of Canada, 2014).

In supporting collaborative research, it is important to identify methodology and data collection methods that are consistent with using a community based participatory research approach (Israel et al., 1998). Ethnography is an effective methodology that can be used within a collaborative context as it requires the researcher to interact with people and spend time within the communities they are studying.

6.2.4) Ethnographic research is useful to elicit in-depth understandings

Age is the greatest risk factor for dementia (Alzheimer's Disease International, 2015), and the number of rural Canadians aged 60 years and older is rising (Statistics Canada, 2011). Currently, Canada is the only G8 nation without a national dementia strategy. Jones (2014) asserts that there is an impending dementia crisis in Canada with intensifying calls for the development of a national dementia strategy. However, policy-makers face important challenges in trying to understand how to best address the growing issue of supporting rural older adults' cognitive health. Guided by ethnography, research using semi-structured, open-ended interviews and observation can offer valuable insight into answering complex questions such as how rural

older adults' conceptualize and support their cognitive health. Data collection in ethnography has been described as "watching what happens, listening to what is said, and/or asking questions through informal and formal interviews, collecting documents and artifacts – in fact, gathering whatever data are available to throw light on the issues that are the emerging focus of inquiry" (Hammersley & Atkinson, 2007, p. 3). LeCompte and Schensul (2010) and others (Atkinson & Pugsley, 2005; Goodson & Vascar, 2011; Leung, 2002) assert that there are key components of ethnography including: intimate and in-person interaction with participants; learning the culture of the group under study; being conducted in a natural setting; using interactive and inductive data collection to inform local cultural theories; understanding human behavior and perspectives within a social and cultural context; and using the concept of culture as a lens to interpret and understand findings. Brown and colleagues (2009) assert that ethnographic research can even augment epidemiological research by identifying new research directions and important research questions. For example, participant observation and interviews can be used to inform the development of a quantitative survey instrument by identifying important topics and questions to address. Although relatively uncommon in health policy (Al-Busaidi, 2008; Canada, 2014; Goodson & Vassar, 2011), ethnographic research using participant observation and in-depth interviews has important implications for informing cognitive health research in Canada.

Participant observation brings several strengths to the study of cognitive health. Through observation, the researcher can understand contextual factors, identify specific details that may otherwise go unnoticed, and experience knowledge firsthand (Goodson & Vascar, 2011). Campbell (2011) asserts that the best way to develop a strong understanding of an issue is to spend an extended length of time interacting with those most impacted to see how they think, experience and feel about the issue. Rossman and Rallis (2012) assert that participant

observation enables one to learn not only about a group's actions but also the underlying meanings, values, and beliefs associated with the actions. Observation is critical to understanding the cultural context under study (Madison, 2005), and offers insight into the interaction between individuals, groups, and their environment (Munhall, 2003). Ethnographers have discussed participant observation as a type of cultural internship, the prolonged immersion of learning the complexities of carrying out multiple tasks of day-to-day living in a culture over time (Cartright & Schow, 2015). Existing research indicates that there is often large inconsistency between what participants say they do, and what they actually do (Keilman, 2012). A strength of participant observation is that the researcher can directly see what activities participants do in relation to what they report (Campbell, 2011). Observations provide insight into the understanding the health and support systems in which people make health decisions. For example, Savage (2006) asserts that ethnography is highly relevant for studying health and illness perceptions and practices as it allows these issues to be observed in the context that they occur. Lastly, it provides researchers with the opportunity to understand the participants' point of view (Spradley, 1979), and develop a deeper understanding of sensitive topics such as stigma in perceptions of cognitive health by offering insight into topics participants might not be willing to talk about.

In studying cognitive health perceptions, semi-structured, open-ended interviews provide valuable insight into understanding rural older adults' cognitive health. In contrast to structured survey research, one of the benefits of semi-structured interviews is that they offer a great deal of flexibility (Morris, 2015). During interviews, researchers can provide clarification of the interview questions to avoid confusion and can later tweak their questions to support participant comprehension (Mayan, 2009). In-depth interviews also allow for probing and asking follow-up questions for clarification and elaboration from the participant (Goodson & Vassar, 2011). This

flexibility allows researchers to examine new areas and develop more in-depth and comprehensive findings. Al-Busaidi (2008) asserts that semi-structured interviews elicit the participant's viewpoints and perceptions and may identify important issues not considered by the researcher. In addition, findings from face-to-face interviews can be augmented by social cues such as voice, facial gestures and body language **(**Opdenakker, 2006). Rossman and Rallis (2012) assert that probes and follow-up questions allow the interviewer to access rich and in-depth information provided by asking for more detail and additional information.

Although ethnographic data collection methods have much to offer towards informing the study of cognitive health, they are not commonly used in health policy research (Goodson & Vasar, 2011). The grounds for this limited role in policy-making are not well documented (Al-Busaidi, 2008). Potential reasons may be associated with the limitations of participant observation and in-person research. For example, this study found that key limitations related to the data collection methods included challenges with inadequate time, extreme winter weather conditions, cold temperatures and unsafe road conditions for travel to the rural communities, limited resources, and financial expenses associated prolonged research in the communities over time.

In addition, the researcher must have strong listening skills and abilities to support social interaction, question development and probing to facilitate clarification and discussion (Al-Busaidi, 2008). Moreover, some assert that the limited influence of ethnographic findings may be founded in a lack of understanding and misperceptions of ethnographic research as being less valuable because unlike epidemiological data, it does not allow for 'scientific' examination (Campbell, 2011). There is a commonly held assumption that a limitation of ethnographic

research is the small sample size and its limited generalizability of the findings. However, Morse notes that in qualitative research:

> We are generalizing the concepts and the theoretical findings, which have been removed from the original context and compared with the results of others. To generalize the findings, we look for a setting with similar problems/characteristics, and recontextualize the results. Such results are useful and insightful, and may provide programmatic guidance and so forth (Morse, 2012, p.136).

She further asserts that in qualitative research, "Saturation is the key to excellent qualitative work… there are no published guidelines or tests of adequacy for estimating the sample size required to reach saturation (Morse, 1995, p.147). Despite this "uphill battle" it is pertinent to conduct ethnographic research as it offers substance and deeper understandings that cannot be elucidated using other methods (Campbell, 2011).

6.3) Conclusion

Existing research on rural cognitive health focuses primarily on perspectives of dementia care rather than understanding perceptions of cognitive health (Anderson et al., 2009). However, emerging literature highlights the importance of prevention and possibility of non-biomedical interventions in support older adults' cognitive health (Smith, 2013). This study examined rural older adults' perceptions of cognitive health, as well as the interventions used by rural older adults to support their cognitive health.

Guided by ethnography and a community based participatory research approach, data was collected through participant observation and two waves of semi-structured interviews with older adults living in two rural communities in Saskatchewan, Canada. In contrast to the current literature which understands cognitive health in terms of pathology (Hogan, Bailey, & Bailey, 2008; Kumar & Ekavali, 2015; Peterson et al., 2009), rural older adults described cognitive health within a more multidimensional and holistic viewpoint, where the domains were highly

interconnected and interdependent. For example, rural older adults' conceptualized cognitive health as consisting of four, interdependent domains including intellectual, social, emotional, and functional health. From the participants' responses, the Rural Cognitive Health Framework emerged which highlighted the four key domains. Rural seniors also identified a range of interventions that existed beyond the biomedical realm, from continuous learning to social media and technology. By working in collaboration with rural older adults, this study's findings provide important information to promote cognitive health in rural areas. It is well documented that interventions are more likely to be effective when they are compatible with the local context and culture (Griner & Smith, 2006). Subsequently, this research has key implications for community leaders, health professionals, and policy makers working to support rural older adults' cognitive health.

With the projected rise in dementia, this study offers valuable insight to support future research on rural older adults' cognitive health. Findings from this study highlight the importance of four interdependent themes necessary to supporting cognitive health in rural communities. First, there is a need to move beyond biomedical interventions to cognitive health interventions that are informed by lived experience and a social determinants approach. Second, lay perspectives and contextual sensitivity are essential to understanding rural older adults' perceptions of cognitive health. Third, partnerships and collaboration with rural older adults is critical to supporting rural cognitive health. Fourth, ethnographic research is useful to elicit rich and in-depth understandings of cognitive health. In order to support cognitive health in rural communities, it is essential to listen to the perspectives of rural older adults. Studying rural older adults' perceptions of cognitive health is vital in facilitating the development of appropriate interventions aimed at dementia awareness and prevention in rural communities

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APPENDIX A

LETTER OF ETHICAL APPROVAL

UNIVERSITY OF SASKATCHEWAN

Behavioural Research Ethics

Certificate of Approval

PRINCIPAL INVESTIGATOR	DEPARTMENT	BEH#
Sylvia Abonyi	Community Health and Epidemiology	14-19

INSTITUTION(S) WHERE RESEARCH WILL BE CONDUCTED
Wolseley, Saskatchewan Watrous, Saskatchewan

STUDENT RESEARCHER(S)
Juanita Bacsu

FUNDER(S)
CANADIAN INSTITUTES OF HEALTH RESEARCH (CIHR)

TITLE
Perceptions of cognitive health: An ethnographic inquiry of rural older adults

ORIGINAL REVIEW DATE	APPROVAL ON	APPROVAL OF:	EXPIRY DATE
22-Jan-2014	10-Feb-2014	Application for Behavioural Research Ethics Review Semi-Structured Interview Recruitment Script Recruitment Poster Semi-Structured Interview Consent Form Semi-Structured Interview Guide Participant Observation Recruitment Script Participant Observation Consent Form Participant Observation Guide Community Workshop Information Community Workshop Advertisement Photograph/Video Release Waiver Application for Behavioural Research Ethics Review Acknowledgement of: Work plan timeline Memorandum of Agreement Watrous and Wolseley Support Services Study References	09-Feb-2015

Full Board Meeting ☐ :

Delegated Review ☒

CERTIFICATION

The University of Saskatchewan Behavioural Research Ethics Board has reviewed the above-named research project. The proposal was found to be acceptable on ethical grounds. The principal investigator has the responsibility for any other administrative or regulatory approvals that may pertain to this research project, and for ensuring that the authorized research is carried out according to the conditions outlined in the original protocol submitted for ethics review. This Certificate of Approval is valid for the above time period provided there is no change in experimental protocol or consent process or documents.

Please send all correspondence to:

Research Ethics Office
University of Saskatchewan
Box 5000 RPO University, 1602-110 Gymnasium Place

PRINCIPAL INVESTIGATOR	DEPARTMENT	Beh #
Sylvia Abonyi	Community Health and Epidemiology	14-19

Any significant changes to your proposed method, or your consent and recruitment procedures should be reported to the Chair for Research Ethics Board consideration in advance of its implementation.

ONGOING REVIEW REQUIREMENTS

In order to receive annual renewal, a status report must be submitted to the REB Chair for Board consideration within one month of the current expiry date each year the study remains open, and upon study completion. Please refer to the following website for further instructions: *http://www.usask.ca/research/ethics_review/*

Beth Bilson, Chair
University of Saskatchewan
Behavioural Research Ethics Board

Please send all correspondence to:

Ethics Office
University of Saskatchewan
Room 306 Kirk Hall, 117 Science Place
Saskatoon SK S7N 5C8
Telephone: (306) 966-2084 Fax: (306) 966-2069

APPENDIX B

MEMORANDUM OF AGREEMENT (MOA)

Study Title: Perceptions of cognitive health: An ethnographic inquiry of rural older adults Healthy brain and aging study

Researcher: Juanita Bacsu, PhD Candidate
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MOA Purpose

The purpose of this memorandum is to provide the terms under which the community and organizational partners agree to participate in the above project. The memorandum outlines the assistance provided by the community and organizational partners.

Primary Research Team:

Principal Investigator: Juanita Bacsu, PhD candidate, Community Health and Epidemiology, Saskatchewan Population Health and Evaluation Research Unit (SPHERU), University of Saskatchewan (U of S)

PhD Committee Members

Dr. Sylvia Abonyi, Community Health and Epidemiology, SPHERU, U of S
Dr. Bonnie Jeffery, Faculty of Social Work, SPHERU, University of Regina (U of R)
Dr. Shanthi Johnson, Faculty of Kinesiology and Health Studies, SPHERU, U of R
Dr. Debra Morgan, Canadian Centre for Health & Safety in Agriculture, U of S

Community Partners

Murray Westby, Community Partner
Noreen Johns, Community Partner
Grant Conlin, Community Partner

Organizational Partner

Dr. Marc Viger, (General Practitioner with specialization in Geriatrics and Care of the Elderly, SHR, and Clinical Professor, Family Medicine, University of Saskatchewan)

Community Partners agree to:

- Assist the researcher with identifying and recruiting members aged 65 and older in the community to participate in interviews
- Assist the researcher with setting up interviews with community members
- Participate in periodic (3-4 months) research and advisory team meetings by teleconference and in-person meetings to review the deliverables and knowledge translation activities developed throughout the project

Organizational Partner agrees to:

- Participate in periodic (3-4 months) research and advisory team meetings by teleconference and in-person meetings to review the deliverables (i.e., community workshop presentations, newspaper article and community report) and knowledge translation activities (i.e., newsletter) developed throughout the project

University Researchers agree to:

- Provide a copy of the interview questionnaires for review and comments
- Provide a copy of the deliverables for review and comments prior to release
- Provide updates on the project work through periodic (3-4 months) research team meetings through teleconference and in-person meetings

This document describes the terms of reference and the conditions of agreement for community partners participating in this project. This memorandum will be reviewed periodically throughout the project to ensure that the project is being conducted in an appropriate manner in each community. Additional points may be added throughout the duration of the project.

_____ _____

Community Partner Name Date

_____ _____

Community Partner Name Date

_____ _____

Community Partner Name Date

_____ _____

Organizational Partner Name Date

_____ _____

Juanita Bacsu, PhD Candidate Date

APPENDIX C
OVERVIEW OF RESEARCH ACTIVITIES

Date	Research Activities
December 2013 - February 2014	• Initial contact with community partners • Submitted ethics application on January 22, 2014 • Ethics revisions approved on February 10, 2014 • PhD Study article printed in SPHERU's *Healthy Aging in Place Winter Newsletter*
February – March 2014	• Developed community advisory committee and signed memorandum of agreement • Created recruitment scripts, flyers, newspaper advertisements and study summary posters • Recruited participants with help of community partners • Pilot test wave 1 semi-structured interview guide with community partners • Phoned participants to schedule interviews
February – May 26, 2014	Data Collection • Conducted data collection (wave 1 interviews, participant observation and field notes) in Watrous and Young • Sent out thank you cards to participants
June – July 2014	Data Analysis • Transcription of audio files and notes • Sent interview transcripts to participants for review and revisions to transcripts • Coded and analyzed data from interviews, participant observation and field notes
June- July 2014	Knowledge Translation Activities • Distributed first edition of *BrainPower Newsletter* to share initial study findings with: ▪ Participants ▪ Watrous Town Council (Recreation Director, Colin Pete) ▪ Watrous Seniors' Centre President (Peter Sunquist) ▪ Saskatchewan Seniors' Association President (Sheila Righi) ▪ Young Seniors' Centre (Noreen Johns) ▪ Danceland - Millie Struby ▪ Ministry of Health's Seniors' Consultant (Stefanie Wihlidal) ▪ Alzheimer's Saskatchewan (Trina Hodgson) ▪ SPHERU website and healthy aging in place Facebook page • PhD study article submitted and printed in the *Watrous Manitou*, on June 23, 2014 • Completed draft of community report with initial findings - *Boosting your brain power: Rural seniors' perspectives of interventions to support brain health*
July 2014	Wave 2 Interview Guide Development • Developed interview guide and concept map for wave 2 interviews • Pilot tested wave 2 semi-structured interview guide with community partners • Ethics approval received for wave 2 interview guide
July-September 2014	Data Collection • Conducted data collection (wave 2 interviews, participant observation and field notes) • Sent out thank you cards
August- September 2014	Data Analysis • Transcription of audio files and notes • Send transcripts to participants for review and make revisions to transcripts • Code and analyze documents • Meetings with community partners to discuss and review community presentations
September 2014	Community Presentations • Young Community Presentation – September 8 (approximately 50 people in attendance) • Watrous Community Presentation – September 11(approximately 50 people in attendance) • Distributed community report - *Boosting your brain power: Rural seniors' perspectives of interventions to support brain health*
October – December 2014	Additional Knowledge Translation Activities • Oral conference presentation on PhD study at *7th International Symposium: Safety & Health in Agricultural & Rural Populations: Global Perspective*, Saskatoon, SK, October 21, 2014 • Poster presentation on PhD study at *7th Knowledge Network in Rural and Remote Dementia Care*, Saskatoon, SK. October 21, 2014 • PhD study article printed in *Canadian Rural Revitalization Foundation E-Newsletter* • Distributed winter edition of *Brain Power Newsletter* and holiday letter with study updates

APPENDIX D
PARTICIPANT OBSERVATION GUIDE

- **Household**
  1. Does the participant live alone in the house?
  2. Are emergency phone numbers or addresses posted?
  3. Are any lists on display? (i.e., shopping lists, to do lists)
  4. Are there signs posted in house? (i.e., lock the front door, turn off water)
     - Where are the signs posted?
  5. Are commonly used items such as keys or eyeglasses kept in a prominent place?
  6. Is medication or a pill organizer evident in the home?
  7. What kinds of food are present in the home?
     - What types of food does the participant eat during the day?
  8. Are pictures on display? (i.e., memory boards and dog example)
  9. Are cabinets labeled to assist in locating objects?
  10. Are any electronic communication devices visible such as a computer, iPad or a Smartphone?
  11. Does the respondent have a calendar or scheduling book on display?
  12. Does the participant have a pet in the household?
  13. Is the person listening to the radio, watching T.V., or have magazines or newspapers around the house?
  14. Are there mentally stimulating materials observable in the home? (i.e., books, cards, Sudoku, crosswords, knitting)

- **Person**
  15. Demographics of participant
  16. Does the respondent wear a Medi-Alert?

- **Environment (Social & Physical)**
  17. What is the season? (i.e., winter or summer)
  18. Where does the participant travel during the day? (seniors centre, pharmacy)
  19. Are any neighbors/visitors or phone conversations observed?
      - Who does the participant regularly communicate with?
      - Where and how does this communication occur?
  20. Does the community have safe sidewalks?
  21. What types of activities does the participant engage in during the day? (i.e., cards, choir)

- Where are they located? (in the household, seniors' centre?)

22. Does the participant engage in any type of physical activity during the day? (i.e., gardening, walking, yoga)
    - Where does the physical activity occur? (i.e., gym, house)
23. How does the participant access local information?
    - Where? (i.e., phone, coffee row, post office)

APPENDIX E
WAVE 1: INTERVIEW GUIDE

Study Title: Perceptions of cognitive health: An ethnographic inquiry of rural older adults

Healthy brain and aging study

1) What does brain health mean to you?

2) How would you describe someone who has a good enough memory?

3) How would you describe someone who doesn't have a good enough memory?

4) What does not having a good enough memory mean to you?

5) How would you describe someone who doesn't have a good memory?

6) Do you use the internet?
   [Probe: What do you use it for?]

7) Do you use a cell phone?
   [Probe: What do you use it for?]

8) Do you think there is anything people can do to stay as sharp as possible?

9) Do you know anyone who doesn't have a good enough memory? [Probe: Has anyone in your family or community –[among own cohort] experienced not having a good enough memory?

   [Probe: How about any of your friends, have anyone experienced not having a good enough memory?

10) How do you think people can keep their minds as sharp as possible as they age in rural communities? [Probe: Determinants of health– social support, physical activity, geography, age, gender]

11) Do you think there are different ways that rural people stay as sharp as possible compared to people in the city?

12) How do you think people in your rural community view someone who doesn't have a good enough memory?

13) Do you do any activities to help keep your mind as sharp as possible? What types of activities do you do?

14) Could you describe to us some things that the community could do to help rural seniors keep their minds as sharp as possible?

15) Is there anything that you think the government could do to help rural seniors keep their minds as sharp as possible?

16) Do you think there are other things that you could do to keep your mind as sharp as possible? [Probe- physical activity, healthy diet, social activity]?

17) How do you feel about your ability to keep your mind as sharp as possible as you age? [Probe: Any concerns?]

18) If you were in charge of getting the word out to others about brain health and staying as sharp as possible, what would you do to make sure everyone knew about it?

19) What do you think is the best way to advertise or share information about brain health and staying as sharp as possible with rural seniors in your rural community? [Prompts: Television, radio, internet, phone, letters, billboards]

20) What things have your heard the television, newspapers, Internet or radio about keeping your mind sharp? [Prompt: Medium information heard from?]

21) What do you think would be the most effective ways to motivate rural seniors to keep their minds as sharp as possible?

22) Would you mind telling us how old you are?

23) Is there anything else that you would like to talk about in relation to brain health and staying as sharp as possible? [Probe: Are there any other questions that I should be asking? Do you have any questions about cognitive health that you would like to learn more about? Do you have any ideas on ways to strengthen this study?]

APPENDIX F
WAVE II: INTERVIEW GUIDE

Study Title: Perceptions of cognitive health: An ethnographic inquiry of rural older adults

Healthy brain and aging study

Section I

1) It has been a while since we last met, so how has your summer been going?

2) What have you been up to? Probe: activities, events, trips

3) Have there been any changes since we last met? Probe: Health, community, family

4) Do you have any questions about brain health? If so, where would you go to get information about brain health?

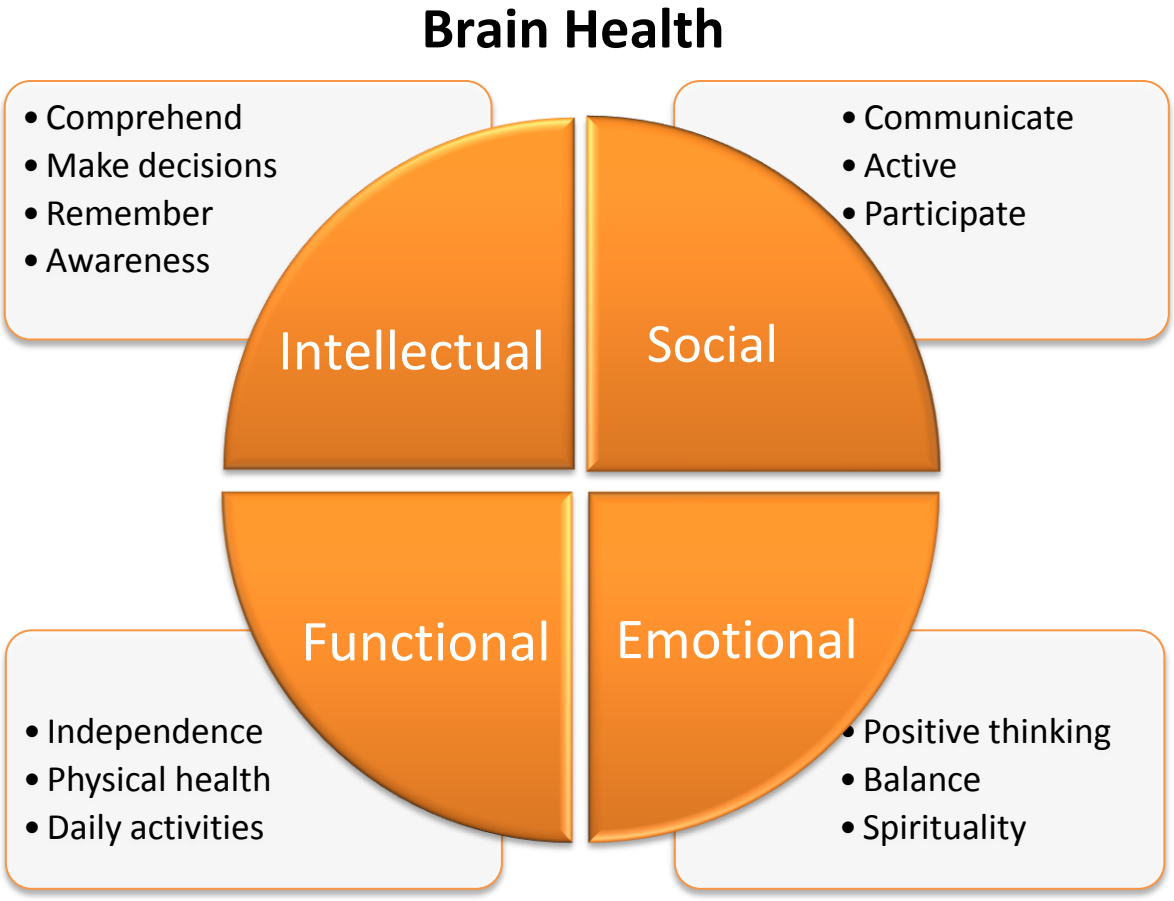
4.1) Who would you talk to?

5) Do you think where you live(living in a rural community) impacts your brain health? If so, how?

6) What phrase do you prefer when talking about brain health? (Probe: what words do you like more?

- Brain health
- Brain fitness
- Brain power

5.1) Why do you like this one?



Section II: We created this picture to highlight participants view's of brain health.

6. Does this picture reflect your views of brain health?
Probe: Have we identified your views of brain health?

7. What do you like or dislike about the picture?

8. Is anything missing?

9. In moving forward, we are always looking for ways to improve our research. We were wondering if you had any ideas on ways we could strengthen our study? (Probe: amount of communication, format of interviews, length of interviews, sharing findings)

10. Are there any other questions that I should be asking? (Probe: Do you have any questions about cognitive health that you would like to learn more about?)

11. Is there anything that has not been touched on here that you would like to comment on?

APPENDIX G
WATROUS & YOUNG SUPPORT SERVICES

Study Title: Perceptions of cognitive health: An ethnographic inquiry of rural older adults Healthy brain and aging study

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Phone: 1 (306) 966-2194
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Watrous & Young Support Service Contacts Phone Numbers

- Watrous Medical Clinic 946-2075
- Watrous Hospital 946-1200
- SHR Mental Health and Addiction Services – Lanigan rural
- (including Lanigan, Watrous, Wynyard, Strasbourg) 365-3400
- Home Care Services
- (Provided by SHR, Lanigan rural) 365-1440
- Mental Health Services – Saskatoon Health Region (Humboldt) 682-5333
- Saskatoon Health Region Mental Health Central Line 655-7950
- Saskatoon Health Region - Mental Health Services 655-8877

APPENDIX H
EXAMPLE OF BRAIN POWER NEWSLETTER

Healthy Aging in Place

Brain Power Edition

Winter 2014

Healthy Brain & Aging Community Presentations

Healthy Aging team members Dr. Bonnie Jeffery, Juanita Bacsu and Dr. Marc Viger shared findings at community presentations in Young and Watrous, SK on September 8 and 11, 2014. The presentations highlighted findings from the Healthy Brain and Aging Study and the Healthy Aging in Place Study 2011-2014. Approximately 50 people attended the presentations including community leaders, older adults, media and local policy makers.

New Report Highlights Findings from the Healthy Brain and Aging Study

A new report highlights actions that support memory and brain health in rural Saskatchewan. The report entitled, *Boosting Your Brain Power: Rural Seniors Perspectives to Support Brain Health* looks at the supports of rural seniors' memory and brain health.

This report is part of Bacsu's PhD study and shares findings from the first wave of interviews conducted in February to May 2014. Approximately 42 older adults from Young, Watrous and Manitou Beach participated in the interviews. Through interviews and spending time with older adults, this study sheds light on the perspectives and viewpoints of rural seniors.

The report identifies a number of actions to support memory and brain health. In particular, supportive activities of brain health were described as being inextricably linked to social interaction, functioning in day-to-day life, emotional well-being and intellectual stimulation such as reading and watching the news.

Transcription of the second wave interviews is currently under way and the next steps will involve data analysis. Following analysis, the team will focus on sharing findings with policy makers, community leaders and health practitioners.

Bacsu notes that understanding rural seniors' perspectives of brain health is vital as it provides critical information to support preventative strategies, awareness and early dementia diagnosis in rural communities. The full report is available on the SPHERU website at www.spheru.com.

Researchers attend National Forum on Brain Health

Researchers Juanita Bacsu, Marc Viger and Bonnie Jeffery had the opportunity to participate in the National Forum on Brain Health in San Diego on March 15, 2014.

The forum included presentations by leaders in the field of brain health, Drs. Paul Nussbaum and Mark Bondi. The forum highlighted recent developments and information in brain health, including the role of socio-environmental indicators in detection, diagnosis and predicting clinical outcomes.

The forum was an informative event for learning and meeting stakeholders in brain health research. The forum was well attended by health professionals, researchers, community leaders and policy-makers.

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Boosting your Brain Power: Day-to-Day Activities

Team members Juanita Bacsu, Carolyn Tran and Dr. Marc Viger have been spending time with rural older adults to see what activities may be contributing to boosting one's memory and brain health.

Noreen Johns, Juanita Bacsu, Carolyn Tran

"It is great to do the interviews but we also enjoy seeing what practices and day-to-day activities may be supporting rural seniors' brain health," said Viger. "We have been very fortunate and appreciate the invites and opportunities that rural seniors have offered us to spend time with them in their homes, during their day-to-day activities, and at local community events."

The team has had the opportunity to attend several community functions and activities including dancing, walking, bowling, cards, coffee row, and musical entertainment. If you have an activity that you think is important to supporting your memory and brain health and would like us attend, please contact Juanita toll free 1 (888) 966-7942.

Facelift for Facebook Page

Healthy Aging in Place Facebook Page has been rejuvenated! Join our Healthy Aging in Place Facebook Page to receive weekly posts, photos and updates, https://www.facebook.com/pages/Healthy-Aging-in-Place/131451063631919.

APPENDIX I
PERMISSION OF CO-AUTHORS

January 20, 2016

Juanita Bacsu
Name of copyright author

I/we, the undersigned, hereby grant permission to microfilm any material designated as being co-authored by me/us in the thesis copyrighted to the person name above:

Signature of Co-Authors

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Marc Viger

Debra Morgan

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